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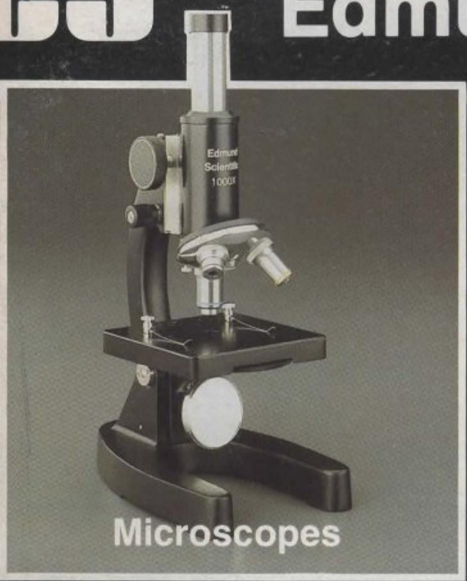
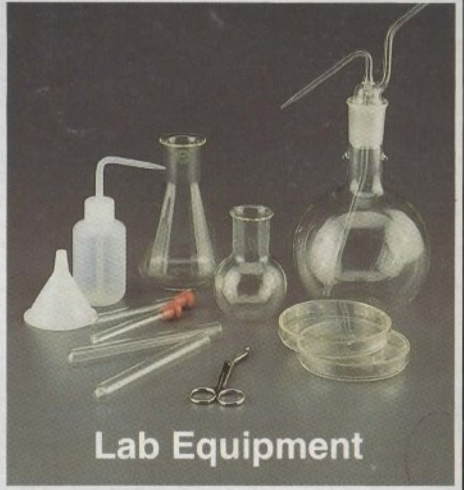
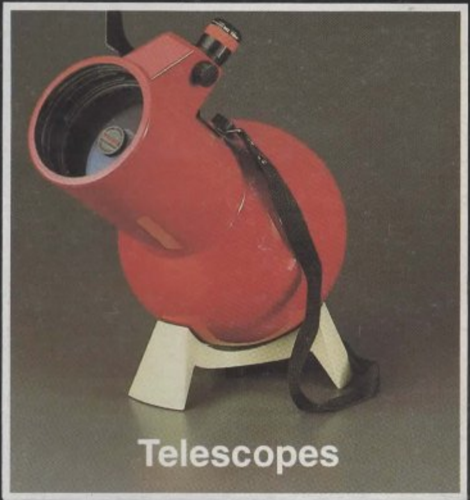
Canada's Science & Technology Agora

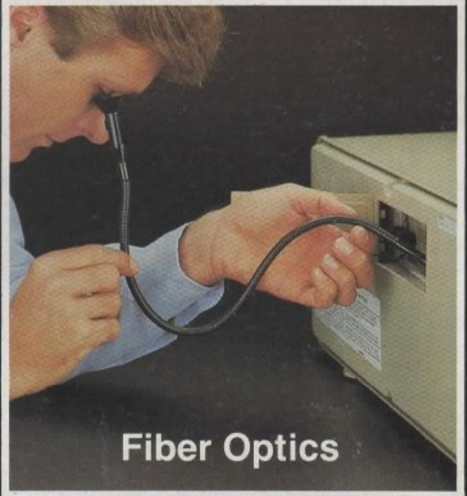
Edmund Scientific Canadian Distributors


Microscopes

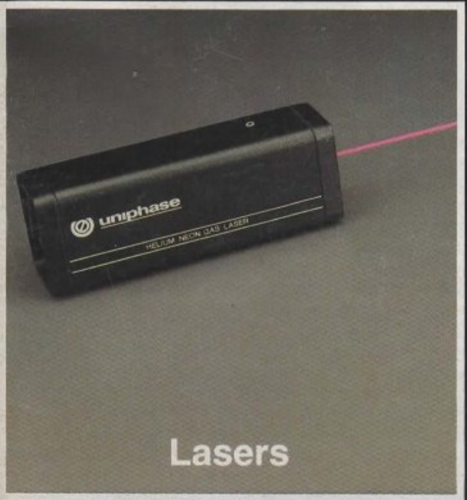

Lab Equipment

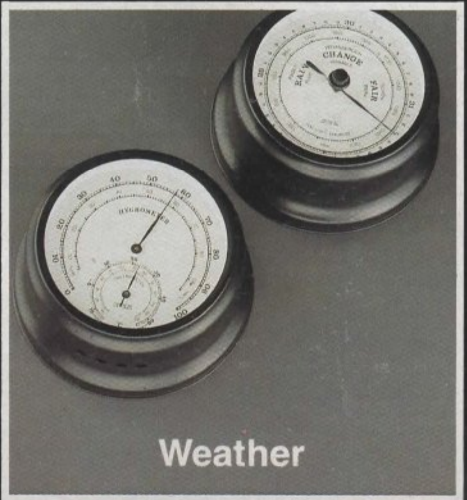

Telescopes

Magnets


Fiber Optics

Magnifiers


Lasers


Weather

Optics

Items For Industry, Schools & Hobbyists
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1986-87 Canadian Catalogue 8608/$3.00; $4.00 when mailed

YOUR COMPLETE INDEX
IS ON PAGE 111

Edmund Scientific Products
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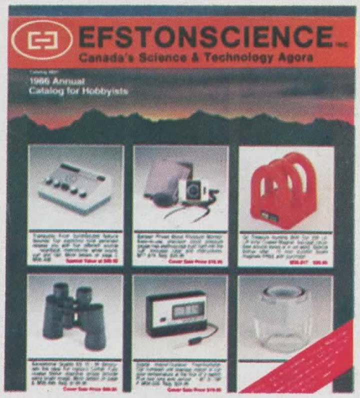
THIS IS OUR RETAIL OUTLET AND SHOWROOM. COME AND VISIT US, IF YOU LIKE OUR CATALOGUE, YOU WOULD LOVE OUR DISPLAYS!



DEAR READER

Through a great effort we were able to produce for you this new catalogue of industrial and educational items. Over the years, our constant search for science and technology-related items, has enabled us to assemble a wide variety of unique and hard-to-find articles, always of the best quality and of tangible usefulness. But space limitations and/or low demand do not always make practical to display all the products to which we have access through our various sources. So, if you need an item or service you cannot secure, give us a call. If we cannot provide the service you require ourselves, we will probably know someone else who can.

As the Canadian distributors of the EDMUND SCIENTIFIC CO. for the last sixteen years, we stock, and we will supply you, with any item from their optical and industrial specialty line, on short notice.

Whether you reside in, or you are visiting Toronto, we invite you to browse in our modern retail facility. You will be pleasantly surprised by the large and varied display of products, many of which are occasionally on sale.

We would also like to draw your attention to the publication of a separate 60-page, full colour catalogue of consumer products. It contains a unique selection of items for hobbyists, or for personal, family and even business uses. Most of these items are designed for fun, comfort, security, amusement or health that only modern science and technology could provide. If you would like your own personal copy, just ask us for one on your company's letterhead, or send $2.00 and will rush a copy to you by first class mail!

Thank you for giving us the opportunity to serve you.

Ezra Efstone

YOU MUST BE PLEASED WITH OUR PRODUCTS. IF NOT, RETURN THE ITEM(S) IN THE ORIGINAL CONDITION WITHIN 30 DAYS. WE WILL GLADLY REFUND YOUR MONEY!

— THIS IS OUR WARRANTY —

EASY ORDERING INFORMATION BY MAIL

It's smart when you can shop from the convenience of your home or office. Browse through the pages and discover the particular items which will give the best value for your money. We guarantee the quality of the products and service we provide. Fill out our convenient order form or use your own stationery. Please include the correct postage and handling with each order. A postage chart is listed on the order form.

BY PHONE: Call anytime if you plan to charge your order. 1-416-787-4581 (6 lines). Our operators will take your calls from 9 a.m. to 6 p.m. Eastern Time, Mon. to Sat. for credit card orders. TELEX 06-969864 Please have billing information and/or credit card number ready when the operator takes your call. We accept Visa, MasterCard. Collect phone calls accepted only for placing orders.

OPEN ACCOUNTS: Available only to business with good credit ratings, federal and local Governmental agencies, recognized schools and institutions. To establish an open account, please send or call with two trade references and one bank reference.

GENERAL INFORMATION

ORDERING QUESTIONS: IF YOU HAVE ANY REASON TO CHECK ON YOUR ORDER, PLEASE CALL OUR CUSTOMER SERVICE DEPARTMENT WEEKDAYS 9 a.m. to 5 p.m. Eastern Time. If an item is temporarily out of stock you will receive a prompt notice. The rest of your order will be filled and shipped.

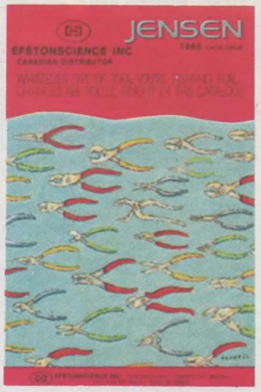
SHIPMENTS: Most orders are filled and shipped within 48 hours of receipt. We use United Parcel Service whenever possible or regular parcel post. Priority mail is a new service offered by the post office in which next day delivery is guaranteed soon to be extended across Canada. Weight limit is 15 kgs. Also you may specify any other means for delivery of your preference, air express, private courier, taxi etc. Please note however that this cost will be separate but not additional to the regular delivery charges shown on the order form.

SHOWROOM: Visit us when you are in the Toronto area. We are located just across the Yorkdale Shopping Center. A map is included on the order form.

HOW TO RECEIVE A CATALOGUE: You are assured of receiving our latest catalogues by making occasional purchases, or you may subscribe sending $4.00. Your copy will be mailed to you first class. Established companies and institutions should inquire a free copy on company's stationary.

PRICES: All prices in this catalogue are effective August 1st 1986 and these prices SUPERCEDE all previous catalogues. Prices are F.O.B. Toronto and are subject to change due to volatile exchange rates and/or printing errors. Any change of specifications and substitutions on your order is subject to your approval.

Extreme care is given to each order we receive. It will be checked and re-checked to insure its safe arrival. But, if damage or discrepancy should occur, Call: (416) 787-4581

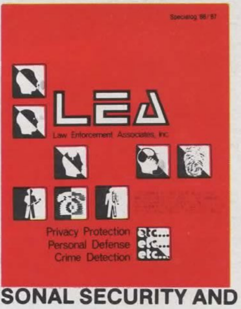


JENSEN TOOLS INC.

A Unique Selection of High Quality Tools, Tool Kits, Electronic Instruments, Hard-To-Find Tools and Technological Specialties

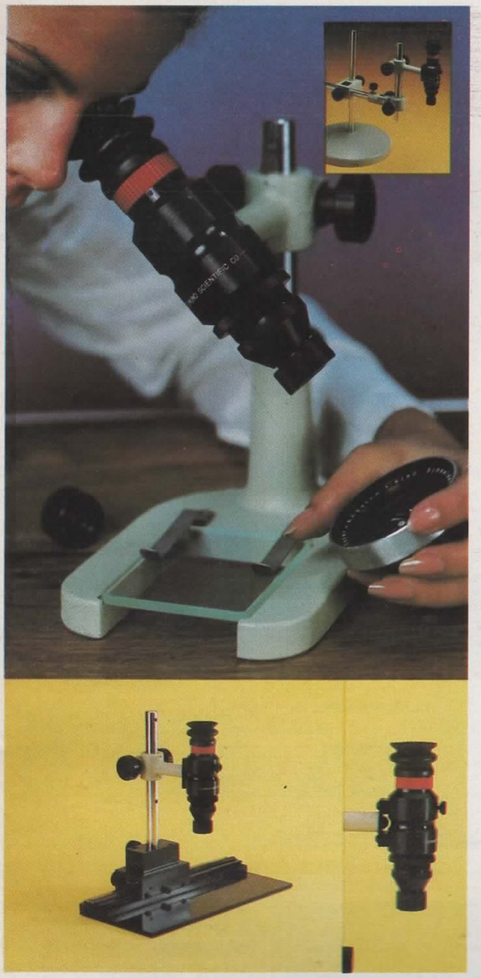
A 64 page 8½"x6" full colour catalogue listing more than 1000 items for Computer Industry, Medical and Office Equipment repair, Instrument and Maintenance, Aircraft and Aviation Technicans, Quality Control Departments ... and Industry!!

JENSEN TOOLS COMPANY is a reputable and successful organization, standard setting and extremely well structered and managed U.S. Company. We are the Canadian distributors for the Jensen Tool Company for the last six years and this is our sixth printing of this originally American made catalogue, now printed in Canada. We have a well organized department to offer fast efficient service in processing all orders of the catalogue items, many of which are regularly in stock as well as on display in our showroom. If you ever use tools or are interested in tools, do not miss this catalogue!! *It has been said that the right tool for a given application is the key to solving problems. The BEST 'right tool' however is the guarantee of success for the user! THE CHOICE IS YOURS!! SEND $2.00 FOR A CATALOGUE TO BE SENT TO YOU BY FIRST CLASS MAIL OR SEND US A REQUEST ON YOUR COMPANY OR INSTITUTION LETTERHEAD!*



PERSONAL SECURITY AND LAW ENFORCEMENT SPECIALTIES

An amazing array of high technology and extremely imaginative instruments, utensils and gadgets for detection, protection and defence against criminal activities of the many forms we may be confronted with. Here are a few such activities you can be successfully protected from or defended against: Industry and Corporate Espionage; Computer, Personal, Residential, Property and Business Security, Alternatively, you can achieve Drug Trafficking and Theft Detection, Privacy Protection and defence against Rape and Mugging, as well as Detection of unauthorized, malicious telephone or communication interception, finger, foot and tire print detection. Also extremely sensitive acoustic surveillance. Total dark and undetected viewing and surveillance systems. All this equipment is described in The LEA Catalogue and is available through our facilities and services. For your copy, send $25.00. Its informative value alone is well worth the investment. It will be mailed to you registered.



WIDE FIELD ERECT IMAGE DIRECT MEASURING SCOPE

Designed by Edmund to provide abundant working space under the lens. Erect image. Objects appear to move under the eyepiece in direction they do under microscope. All metal base with removable glass stage, permitting 360 degree rotation for examination versatility. Rubber eyeguard.
Magnification: 4X, 10X, 20X
Objectives: 10X and 20X
Eyepiece: 28mm RKE with two scale reticle—0-0.4″ (1 Div. = 0.005″) and 0-0.2″ (1 Div. = 0.0025″).
Working Distance: 4X-8½″; 10X-2″; 20X-1″
Field of View: 4X-1¼″; 10X-½″; 20X-¼″
Stage Size: 3″ X 3¾″ transparent stage with clips
Weight: 7 pounds
Height: 10″
E72,469 $687.50

Microscope Without Base
E72,537 $573.50

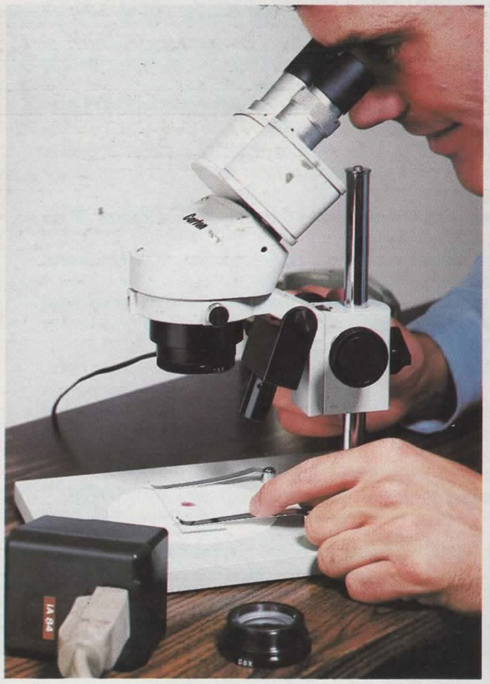
DIRECT MEASURING SCOPE WITH UNIVERSAL LAB MOUNT

¾″ shafts, universal pivot, 360 degree rotation, 15″ radius and 10″ horizontal/vertical travel. Provides greater working distance and application versatility.
E72,536 $849.50

TRAVELING/MEASURING MICROSCOPE

Here's our unique combination of direct measuring microscope J72,469 and linear slide and track mount. For measuring objects that calipers cannot handle. Linear slide track has dovetail carriage and 12″ scale graduated in 0.01″ increments. 8″ measuring range. 6X 12″ base for holding specimens.
E31,461 $757.50

ORDER FROM US DIRECT
Efstonsciene has only one location, and services all orders directly from our Toronto, Ontario premises.

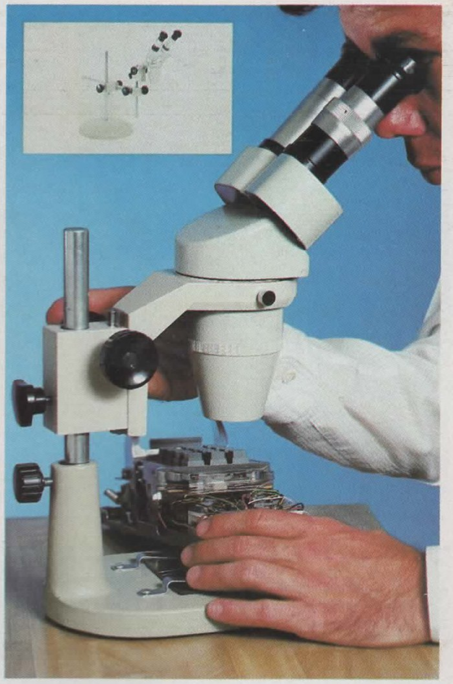


DEPTH PERCEPTION STEREO SCOPE

This superior tool is recommended for anyone who wants a reliable, precision microscope to work and study with. Binocular body is inclined 45 degrees and rotatable through 360 degrees for observation from any direction. Eyepiece tube lock prevents accidental damage by misuse. Lock screws hold eyepieces in place. With focusing lock mechanism. Gray all-metal body and base. Fully coated optics. C34,746 $654.50
Magnification: 5X to 40X.
Objectives: Built-in 2X. Supplementary 0.5X and 1.5X objectives.
Eyepieces: Wide field 10X, 15X and 20X.
Working Distance: 2X objective—85mm; 1.5X objective—149mm; 0.5X objective—166.7mm.
Field of View:

Objective	2X	1.5X	0.5X
10X Eyepiece	8.5mm	11.3mm	34mm
15X Eyepiece	6.5mm	8.5mm	25.6mm
20X Eyepiece	4mm	5.3mm	16mm

Illumination: 6W bulb and condenser lens with 110V transformer.
Stage Size: 100mm diameter. Includes clips.
Focusing: Rack and pinion.
Weight: 10 pounds.
Height: 10″ to 16″.



STEREOSCOPIC MICROSCOPE PROVIDES TRUE THREE-DIMENSIONAL ERECT IMAGE

Depth perception under magnification is the hallmark of this superb microscope. Permits you to detect flaws and surface depressions in materials and perceive an object's dimensions. Wide field binocular vision. True erect image. Porro prism system erects the image vertically, right to left. Metal horseshoe base with glass stage. 360 degree positioning with lock. Tan.
Magnification: 20X and 40X
Objectives: 2X and 4X paired achromatic objectives, turret mounted
Eyepieces: matched 10X wide field
Working Distance: 20X-3½″; 40X-2½″
Field of View: 20X-0.33″; 40X-0.22″
Stage Size: 3″ x 3¾″ with transparent stage and clips
Weight: 10 pounds
Height: 13″ to 21″
E85,056 $896.50

STEREO MICROSCOPE WITH UNIVERSAL LABORATORY MOUNT.

360 degree rotation, 15″ radius, 10″ horizontal/vertical travel and ¾″ shaft. Provides greater versatility in working distance, position and application.
E85,161 $994.50

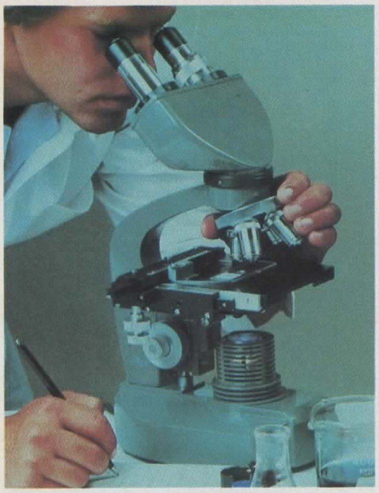
100X DIRECT MEASURING MICROSCOPE

For quick and precise measurements in laboratories, workshops and assembly lines. Features a dual scale reticle graduated in both inches and millimeters. A turn of the eyepiece brings the reticle into sharp focus. Vertical adjustment knob sharpens the subject image. Includes a fully adjustable—raised or lowered—battery operated penlight illuminator which can be removed for use elsewhere. Microscope has a cutaway opening at base for subject manipulation.

No.	Magnification	Field of view	Measuring range	Minimum graduation	Price
C61,193	100X	1.7 mm	1.0mm/.05″	.01mm/.001″	$199.50
C49,001	60X	3.25 mm	2.4mm/.10″	.02mm/.001″	$189.50
C49,633	40X	4.25 mm	3.0 mm/.10″	.02mm/.001″	$179.50

YOUR COMPLETE INDEX IS ON PAGE 111

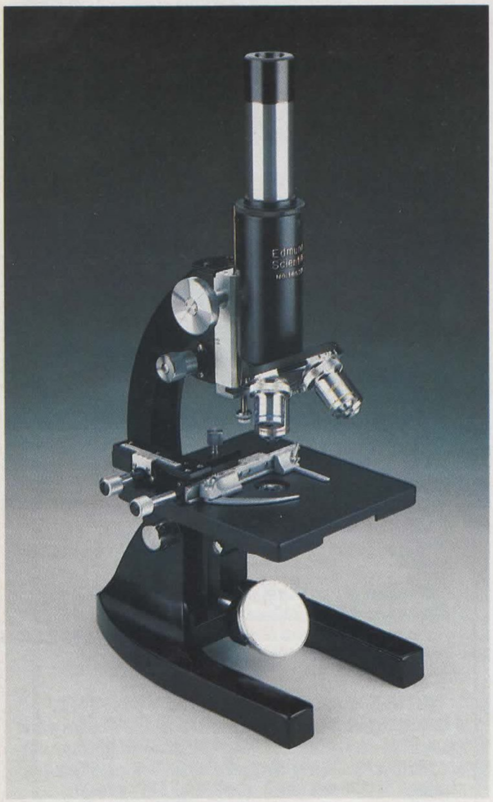
Laboratory Microscopes



EDMUNDS'S PRECISION FOUR OBJECTIVE BINOCULAR MICROSCOPE

Offers clear, high quality images for precision work. For medical and industrial research, there is no finer instrument available. With storage case.
C31,317 $1475.00

Magnification: 40X to 1000X
Objectives: 4X, 10X, 40X and 100X parafocal center achromats. Turret mounted.
Eyepieces: matched 10X wide field
Working Distance: 4X-12.0mm; 10X-7.2mm; 40X-0.5mm; 100X-0.1mm
Field of View: 4X-4mm; 10X-1.65mm; 40X-0.40mm; 100X-0.16mm
Illumination: Built-in 30 watt bulb at base with light intensity regulator and blue filter. Adjustable condenser lens (NA1.30) with iris diaphragm.
Stage Size: 120mm X 140mm with 20mm center hole. Built-in coaxial X-Y stage, 40mm front to back, 70mm left to right. Fixed verniers to read to 0.1mm. Maximum 80mm opening. Slide holder arm accepts large and small glass slides.
Weight: 20 pounds. **Height:** 15½″
Binocular: Inclined 45 degrees. Rotates 360 degrees.



FOUR OBJECTIVE LAB MICROSCOPE

Offers versatility combined with precision performance for hospitals, medical colleges and industry. With storage case.
Magnification: 40X, 100X, 400X, 1000X
Objectives: 4X and 10X achromats; 40X spring loaded; 100X oil immersion
Eyepiece: 10X wide field
Working Distance: 4X-12.0mm; 10X-7.2mm; 40X-0.5mm; 100X-0.1mm
Field of View: 4X-4.50mm; 10X-1.70mm; 40X-0.45mm; 100X-0.18mm.
Illumination: plano-concave mirror on gimbal mount with adjustable bright field condenser (NA 1.30); 30mm iris diaphragm; and 30mm diameter filter mount and blue filter. Condenser is mounted on 90 degree adjustable incline arm.
Stage Size: 120x140mm with 22.5mm center hole and clips. Scope comes with precision graduated stage with 30mm front to back and 50mm left to right excursions. Fixed verniers read to 0.1mm. 3¼″ maximum opening. Dual control knobs.
Weight: 14 pounds with case
Height: 14″ minimum; 16″ maximum.
Focusing: rack and pinion facilitates coarse and fine focusing. Fine focus is calibrated to 1 rev = 0.020mm.
Microscope also includes deluxe upright inclinable body; carrying case; dust cover.
C31,315 $854.50

Plug-In Illuminator for Microscope F31,315: Plugs into ¼″ size substage mirror sockets. With daylight white glass filter, 120V, 30W screw base lamp, 6 foot cord, on/off switch and extra bulb. **C50,222 $66.50**

ILLUMINATED STEREO MICROSCOPE

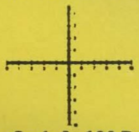
High resolving power is combined with wide flat field of view and three dimensional vision for depth perception. 360° rotating body tube. With storage case.
Magnification: 20X and 40X
Objectives: Rotating 2X and 4X matched pairs.
Eyepieces: 10X wide field w/light shields. Mounted on 45 degree incline.
Working Distance: 64mm
Field of View: 9.5mm at 20X; 4.7mm at 40X
Illumination: Built-in 10W incident with 29mm blue filter, 3W transmitted.
Stage Size: 90 diameter glass plate; 30mm diameter illuminated hole
Focusing: rack and pinion
Weight: 14 pounds. **Height:** 15¾″
With dust cover and case. Diopter and interpupillary distance adjustable from 50mm to 75mm. **C31,316 $849.50**

Accessory Dark Field Illuminator. Specimen will appear to be luminous against an unlit or dimly lit background. With extra bulb and handheld clip. **E33,591 $279.50**

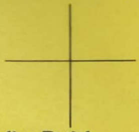
Microscope Accessories

MICROSCOPE EYEPIECE RETICLES

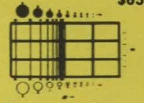
Standard 21mm Dia. (0.825 In. 1.5mm Thick)



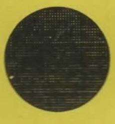
Cross Scale In 100 Parts
E30,075 1mm Scale $65.95
E30,076 5mm Scale $65.95



Crossline Reticle
E30,070 Standard Size $65.95
E31,439 18.5 Dia. x 1.5mm Thick $65.95

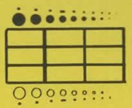


Porton Reticle
E30,084 $109.50

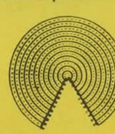


Squares Over Entire Field

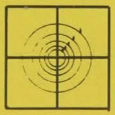
E30,072	0.25mm Squares	$65.95
E30,073	0.5mm Squares	$65.95
E30,111	1mm Squares	$65.95



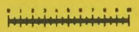
Patterson Globe & Circle
(Air Pollution)
E30,083 $109.50



Concentric Circles
0.5mm to 12mm
E30,077 $65.95

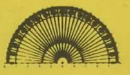


Fairs Type No. 3
E30,270 $109.50



Horizontal Scale in 100 Parts

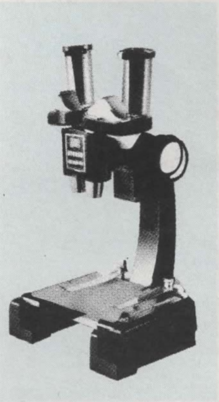
E30,101	0.1″ Scale	$65.95
E30,110	0.5″ Scale	$65.95
E30,081	1mm Scale	$65.95
E30,068	5mm Scale	$65.95
E30,066	10mm Scale	$65.95



Protractor
E30,079 $65.95

TAKE PICTURES THROUGH YOUR MICROSCOPE

Attach correct camera adapter to this "T" adapter which fits and locks on eyepiece tubes up to 0.991″ O.D. Microscope eyepiece fits through "T" adapter which attaches to camera adapter. Fits F72,405, F72,406 and F85,049 microscopes.
E41,100 $49.50



Stereo Microscope Offers 3D Resolution

well-crafted stereo microscope at an economical price to fit your budget. The ideal instrument for examining bulky specimens as well as an excellent introductory stereo microscope for the hobbyist or high school student interested in science or electronics. Examine pond water droplets, specimens, grains of sugar, hair, textile fibers stones, coins, salt, yeast, with three dimensional resolution. Provides a long 70mm working distance allowing for dis-section of samples and assembly of electronic parts. 20X magnification, hard coated objective smooth rack and pinion focusing, adjustable interpupillary distance, right eye adjustment, translucent glass stage with spring clips, and rubberized base pad for non-slip, non-scratch use on any surface. Its strong metal construction provides for durability under rugged use. Highly recommended for biology students. 10 in. tall. **20X Magnification**

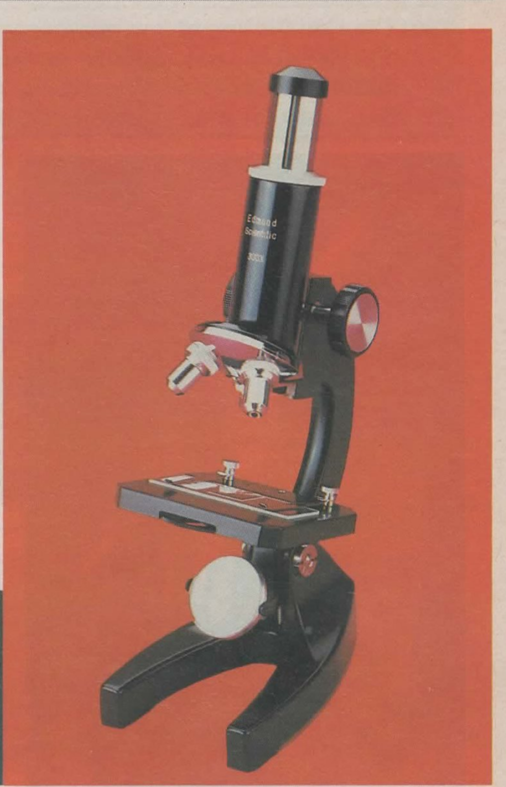
Stereo Microscope C49,140 $148.95

OUR BEST MICROSCOPE VALUE...THE EDMUND 50X, 150X, 300X RE70

Here is a professional instrument priced within anyone's budget. Quality optics for a precise, clear view. All metal construction will withstand years of rugged use in school, lab or home. Arm inclines for easy viewing. 50X is perfect for examining insects and small specimens. 150X is well suited for identifying minute features. 300X is powerful enough to see many bacteria. An excellent basic scientific tool which is dependable and reliable. With handy storage case.

Magnification: 50X, 150X, 300X
Objectives: 5X, 15X, 30X color corrected achromatic objectives turret mounted. Eliminates color aberrations usually associated with budget-priced microscopes.
Eyepiece: 10X.
Working Distance: 50X-11.7mm; 150X-3.0mm; 300X-0.8mm
Field of View: 50X-2.55mm; 150X-1.05mm; 300X-0.47mm
Illumination: 1⅜" plano and concave adjustable substage mirror with clickstop adjustable diaphragms (1-4.5mm diameter, 1-7mm diameter, 4-10mm diameter) suitable for mounting filter from 11mm to 13.5mm in diameter.
Stage Size: 3"X3½" with ⅜" center hole and clips.
Focusing: rack and pinion
Weight: 2 pounds
Height: 10"

RE70 Microscope	C70,008	$179.50

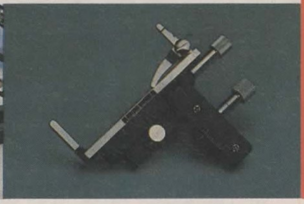


Microscope Accessory Kit: Here are all the basic accessories needed to get involved in the fascinating world of microscopy. Kit includes our basic reference work "Hunting With The Microscope." Book details how a microscope works, what items should be looked at in close detail, how to prepare and care for a slide and more. Kit also includes prepared slides, a well slide, cover glass, slide kit, brine shrimp eggs, stains and instructions. The perfect introduction for students young and old. E70,504 $39.50

Microscope Stage Sturdy, attachable graduated mechanical stage.
E31,954 $76.50

Illuminator for RE70 Microscope. See Page 6 for specifications.
C35,241 $19.50

Hunting with Your Microscope Book.
C9207 ——— $9.50

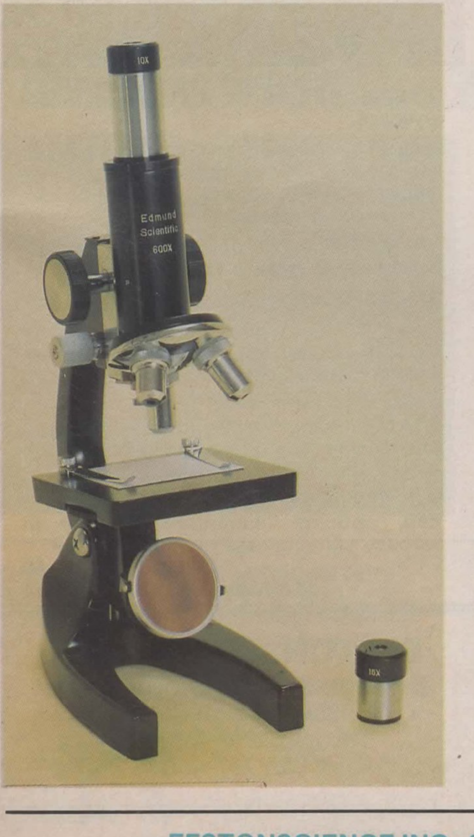


EDMUND DELUXE LABORATORY MICROSCOPE RE72

- **100X to 600X Magnification Range**
- **Three Turret Mounted Objectives**
- **Dual Knob Rack and Pinion Focusing**
- **All Metal Construction**

Medium duty microscope offers a larger 3½" square stage and broader base than comparable scopes. Built for repeated "hands-on" use in classroom or industry. Weighs a hefty 3½ pounds. Full feature monocular design. All metal construction. Fully coated optics. Fully adjustable incline arm for convenient table top use. Black base with silver trim and eyepieces. With hardwood storage and carrying case. C72,406 $239.50

Magnification: 100X, 150X, 225X, 400X, 600X
Objectives: 10X, 15X, 40X achromatic turret mounted.



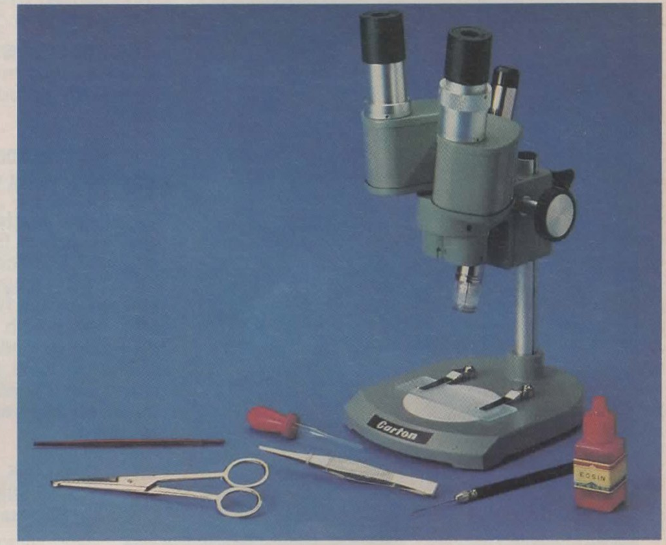
Eyepieces: interchangeable 10X and 15X.
Working Distance:
7.5mm with 10X objective; 3mm with 15X objective; 0.8mm with 40X objective.
Field Of View:

10X Eyepiece	10X Objective	1.2mm
	15X Objective	0.8mm
	40X Objective	.35mm
15X Eyepiece	10X Objective	0.7mm
	15X Objective	0.5mm
	40X Objective	0.2mm

Illumination: Revolving 1⅝" diameter plano and concave substage mirror with substage click stop. Adjustable diaphragms (1-4.5mm diameter, 1-7mm diameter and 4-10mm diameter) suitable for mounting filters from 11mm to 13.5mm diameter.
Stage Size: 3½" square with 10mm center hole.
Focusing: rack and pinion
Weight: 3.52 pounds
Height: 11½"

"T" Adapter for Camera. Specify camera type and we will supply the proper adapter. Allows the microscope to be used for photographic purposes.
E41,100 $49.50

Illuminator for RE72 Microscope. C50,222 $66.50



EDMUND SCIENTIFIC STEREO RE31 MICROSCOPE

- **3 D Resolution**
- **20X Magnification**
- **All Metal Construction**
- **Removable Illuminator**

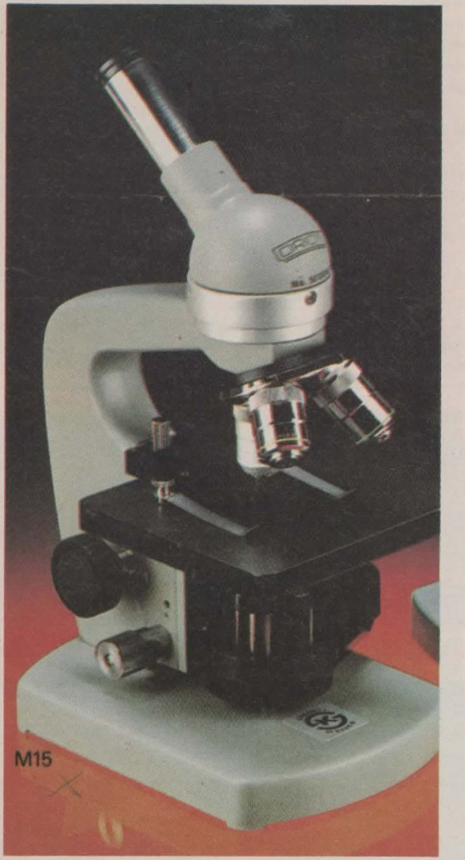
Provides a long 70mm working distance for dissecting specimens and for parts assembly. Durable and rugged steel construction. Hard coated objectives. Adjustable interpupillary distance. Right eye adjustment. Non-slip base. Well suited for industrial and laboratory applications.

Magnification: 20X
Objectives: 2X matched achromats
Eyepieces: 10X wide field
Working Distance: 71.6mm
Field of View: 8.5mm
Illumination: removable penlight (takes two "AA" batteries).
Stage Size: 60mm glass with spring clips.
Focusing: rack and pinion
Weight: 2.2 pounds
Height: 180mm minimum. 288mm maximum. Gray body and base. Black and silver trim.

RE31 Microscope	C31,140	$225.50
Illuminator For RE31 Microscope.	C35,241	$19.50

Utility Microscopes

The ORION line of fine microscopes are made by the PENTAX Optical Manufacturing to satisfy most of the needs for a professional use, college assignments or workshop utility. Extremely rugged construction and of excellent optical quality and precise on controls. We recommend any of these instruments for the work intended that will perform flawlessly for many years to come. Therefore a sound investment.



A superb optical instrument for microscopy especially suited for biology and medical sciences research. Most importantly it is available at a very reasonable price comparing to high quality and operating features. We especially recommend it for professional use.

MAGNIFICATION POWERS 50X to 1500X
Solid one piece body with movable table, best for photography attachments, with built in illuminator and fine focus adjustment also safety stop.

EYEPIECES: 5X widefield, 10X and 20X

SOLID BODY. 45° inclined 360° rotatable monocular tube. 160mm tube length.

NOSEPIECE: Triple revolving nosepiece with click stop.

OBJECTIVES: 4X (0.10N.A.) 40X (0.65N.A.) and 100 (1.25N.A.) objectives. Objectives are parfocal, parcentered and coated to prevent reflection.

FOCUS CONTROL: Rack and pinion coarse focus adjustment with tension control knob, with slip-clutch Lever-type fine focus adjustment. Sensitivity 0.004 mm. Adjustable safety stop included.

STAGE: 100 x 100mm square stage surface.

CONDENSER: 0.65 N.A. single-lens condenser with iris diaphragm.

ILLUMINATOR: Built-in illuminator with focusing condenser.

ACCESSORIES: Dust cover, eyepiece dust cap, coarse adjustment tension wrench and extra light bulb included. Packed in wooden carrying case.

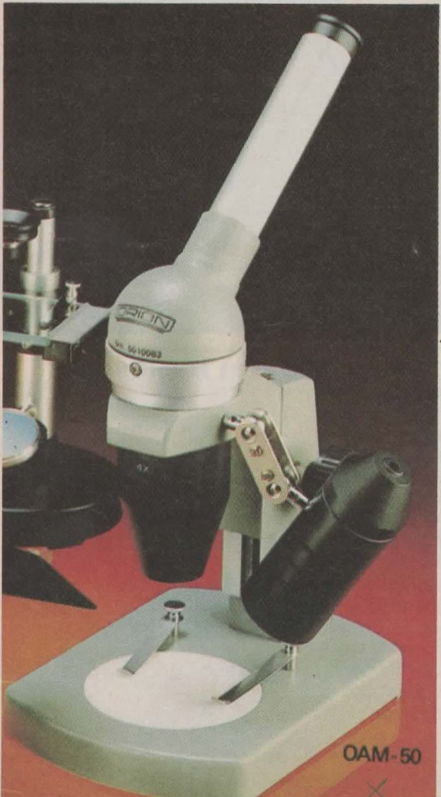
C49,741 $784.50

C49,808 Camera attachment $69.50
(Please specify camera make)

Same well made body construction and optical quality except for that it comes with reflective concave light concentrating mirror and coarse focus, with magnification power of 40X - 600X, two eyepieces 10X, 15X and three objectives 4X, 10X, 40X which makes it ideal for high school graduate or college freshman to carry through his/her studies and research papers. Ideal for workshop use where higher magnification of thin material or very flat surface inspection is required.

C49,810 $298.50

C49,741K Camera Attachment $85.50
C49,808 Camera attachment $69.50
(Please specify camera make)



A monocular low power microscope of high quality is a very useful tool for many assignments ranging from quality control to jewellery inspection or manufacturing, stamp and coin collection plus botanic, mineral specimen examination and field use are a few suggestions. It comes with attachable illuminator, 360° rotating head for convenient and sharing viewing among two persons on the same subject.

SPECIFICATIONS:

Erect image for true viewing

Wide field eyepiece

Long working distance

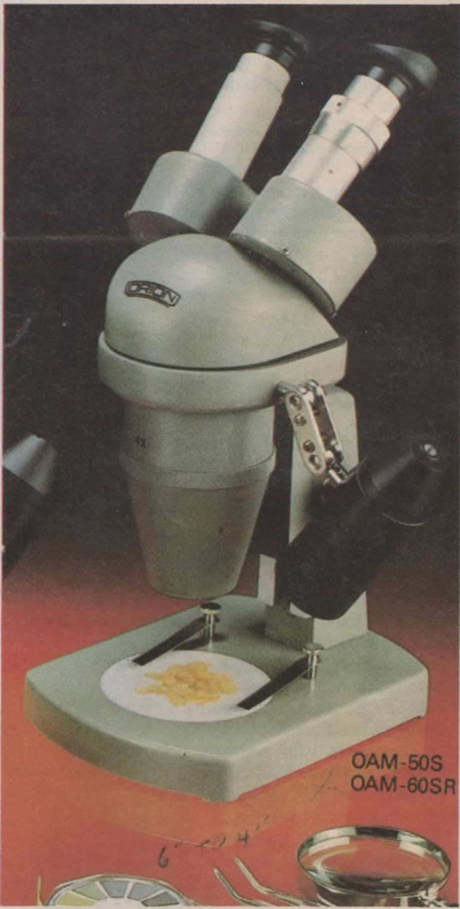
Stage size 4½ x 5½"

Rack and pinion focussing control

Choice of magnification.

20X, 40X, 60X	**C49,811**	**$179.50**
Zoom from 40X to 80X	**C49,812**	**$196.50**
Illuminator	**C49,813**	**$29.50**

Binocular stereo microscope with high quality optical features and very compact for work shop use. Especially suitable for quality control and examination of minerals, uneven surface can be easily inspected and where depth of field is necessary.



EYEPIECE PAIRS: 5X, 10X, 15X with rubber eyecaps.

BODY: 45° inclined, 360° rotatable binocular head. 55-75mm interpupilary distance adjustment with adjustable diopter correction on left eyepiece.

OBJECTIVES: 2X objective with rotable nosepiece to make a 4X objective lens

MAGNIFICATION: Range 10X, 20X, 30X, 40X, 60X

FOCUS CONTROL: Rack and pinion coarse focus adjustment with tension control knob and slip-clutch.

STAGE: 140mm x 160mm base with interchangeable black and white 100mm round plastic stage plate

ACCESSORIES: Dust cover, eyepiece dust cap, optional illuminator. Packed in wooden carrying case or styrofoam box.

C49,743 $362.50
Illiminator C49,813 $29.50

EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4
(416) 787-4581

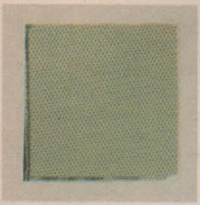
Microscope Accessories

SUBSTAGE IRIS

Blued steel leaves. Brass mount. 32mm filter holder.

C40,997—1-25mm aperture. 28mm threaded shoulder **$44.50**

F40,998—1-30mm aperture. 32mm threaded shoulder. **$53.50**



1″ X 1″ RONCHI RULINGS

Tests microscope for flatness of view. **100 lines/inch**
E30,513 $18.50

200 lines/inch
E30,516 $19.50

300 lines/inch
E30,518 $21.50

STANDARD MICROSCOPE EYEPIECES

Huygenian eyepieces are most commonly used. However, Periplan eyepieces give a flatter field and are excellent for use with achromatic and apochromatically corrected objectives.

5X Huygenian	C30,126	$29.50
10X Huygenian	C30,128	$31.50
15X Huygenian	C30,129	$33.50
20X Periplan	C30,130	$49.50
25X Periplan	E30,131	$131.50

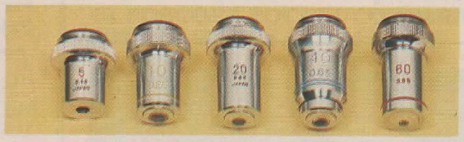
EYEGUARD CUTS AMBIENT LIGHT

Aids in viewing ease of images through a microscope. For use with a 0.966″ dia. eyepiece. Black. Flexible and durable. Won't harm eyepiece.
E34,762 $14.50

OIL IMMERSION OBJECTIVE LENS

100X, 1.25 n.a., standard thread, retractable nose. Superior resolution, high magnification & aperture objective.
C41,670 $144.50

Immersion Oil (2 oz.)
C35,736 $6.95



ACHROMATIC OBJECTIVES

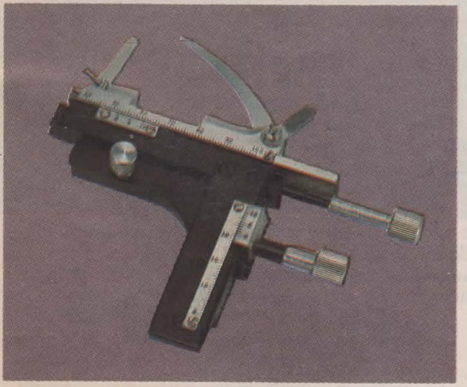
Excellent for both visual and photomicrographic use. Objectives give crisp image, free of residual color. All are designed for tube lengths of 160mm and cover glass thickness of 0.18mm. Standard thread.

Number	C30,045	C30,046	E30,047	C30,048	C30,049
Power	5X	10X	20X	40X	60X
N.A.	0.10	0.25	0.40	0.65	0.85
Price	$29.50	$39.50	$99.50	$69.50	$95.50

ZOOM MICROSCOPE EYEPIECE

Fits all standard microscopes. 10X to 20X eyepiece. All-metal mount. Anodized. Adjustable clamping ring. Coated optics. 2¾″ long; 0.912″ diameter, 1½″ zoom ring diameter.
C60,270 $79.50

Microscope Stages



MICROSCOPE STAGE

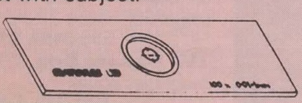
Precision, graduated stage is helpful in relocating slide fields. Has 30mm front to back and 50mm left to right excursions. Fixed verniers read to 0.1mm. Dual control knobs, horizontally-positioned, are conveniently located on the right side. Slide holder with adjustable arm and spring clip accepts both large and small glass slices. Maximum opening of 3¼″. Black and chrome unit. Two locating pins and thumb screw attach to microscope stage. The latter can be easily drilled to accommodate stage. Adapts to X-Y positioner.

Microscope Stage **C30,058 $126.50**

YOUR COMPLETE INDEX IS ON PAGE 111

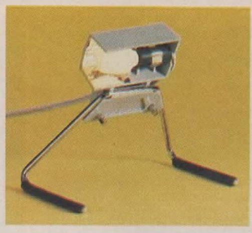
MICROSCOPE STAGE MICROMETERS

Reticle scales are all mounted on 1″ x 3″ standard glass slides and protected with a cover glass. Designed for use in direct contact with subject.



Number	Description of Pattern	Price
E30,133	10mm scale in 100 parts	$107.50
E30,085	5mm scale in 100 parts	$107.50
E30,088	1mm sq. in 100 part grid numbered horizontally, lettered vertically	$129.50
E30,593	0.1mm scale in 50 parts	$186.50
E30,086	0.1" scale in 100 parts	$107.50
E30,592	0.005" scale in 50 parts	$129.50
E30,036	1mm scale in 100 parts	$107.50

Microscope Illuminators

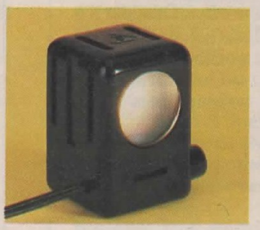


BAUSCH & LOMB RITE-LITE II

Seven watt, 115 volt illuminator. Lamp is mounted on a chromium-plated steel rod stand with protective plastic feet. Gray plastic lamp housing.
C35,241 $19.50

TUNGSTEN ILLUMINATOR

Designed especially for stereo microscopy. 120V/6V variable transformer base. At full intensity, lens system projects 35mm spot with 600 foot candles intensity. From Bausch & Lomb.
C35,237 $279.50



BAUSCH & LOMB OPTILUME

120V illuminator with 15W bulb. 6Amps. 3″ x 2″ x 1¾″. 1⅜″ diameter white light source. On/off switch. 58″ cord. For binocular microscopes.
E35,240 $93.50

FIBER-LITE

Provides 10,000 foot candles of illumination. 30W Quartz-Halogen lamp. 26″ gooseneck fiber optic light. 3-position light intensity switch. Self-supporting. Suitable for up to 20X magnification.
E35,277 $419.50

PLUG-IN ILLUMINATOR

20 watt blue filter illuminator plugs into ¼″ size substage mirror sockets. 120V. With daylight white glass filter, 6 foot cord, on/off switch and extra bulb.
C50,222 $67.50

MICROSCOPE ILLUMINATOR

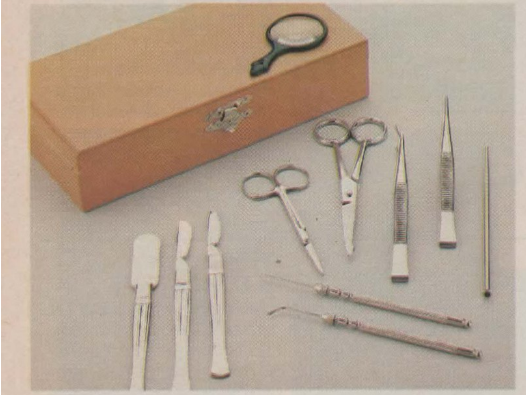
Sliding arm adjusts from 3″ to 11″. W/25 watt bulb & travel case. 115VAC, 60Hz. Keyhole slot for wall mounting or stand on table. Black and chrome. W/travel case.
E42,567 $79.50

SCOPE LIGHT

Illuminates microscope from surface level. Adjustable arm, sturdy circular base. 4½″ high. Black w/silver trim. W/ bulb. Permits more detailed studies from any scope.
E34,769 $69.50

Spare Bulb
E34,770 $7.25

Microscope Accessories



COMPLETE DISSECTING SET

Set includes all the tools necessary to perform laboratory experiments. Tools ae made of stainless steel for durability. Always have the tools you need available at your fingertips. Set includes:

—Sharp Scalpel
—Straight Needle
—Ruler
—Straight Tweezers
—Two Pairs of Scissors
— Eye Dropper
—Curved Needle
—Blow Pipe
—Curved Tweezers
—Magnifiers

Dissecting Kit C35,167 $38.50

EIGHT PIECE DISSECTING KIT

Includes scalpel, scissors, tweezers, dissecting needle, curved needle, ruler and glass eye dropper. Comes in handy storage box. For biology, botany and research work.

Dissecting Kit C31,191 ~~$14.95~~

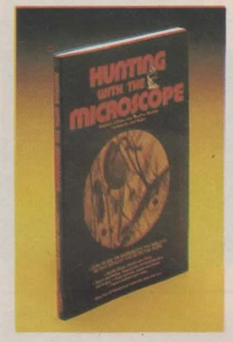
YOUR COMPLETE INDEX IS ON PAGE 111

On Sale $9.50

SPECIMEN BOX

Surplus 5" x 8" box has 12 1" diameter clear containers, each ½" deep. With a clear lid and foam cushion. Protect and highlight your collection of gems, minerals, bugs or shells. Black box.

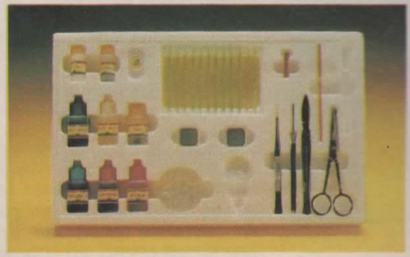
E34,759 $11.95



"HUNTING WITH THE MICROSCOPE"

The perfect introduction to the microscope. Shows what to look for and how to go about working a scope. Covers slide preparation, molds and more. 125 pages. Paperback.

C9207 $9.50



SCOPE ACCESSORY KIT

Provides all the basic accessories needed to get involved in the fascinating world of microscopy. Kit includes the book, "Hunting With The Microscope," which explains how one works. Kit also includes several prepared slides, well slide, slide kit, cover glass, stains, brine shrimp egg specimens and instructions. The perfect start to what could develop into a lifelong hobby.

Accessory Kit E70,504 $39.50

NATURE SPECIMEN ASSORTMENT FOR DISSECTING

Assortment includes nine specimens packed in a jar: a crayfish, frog, grasshopper, perch, starfish, earthworm, clam, grantia sponge and beetle. For biologists and would-be biologists.

Specimen Assortment For Dissecting E71,645 $29.50

YOUR COMPLETE INDEX IS ON PAGE 111

HATCH YOUR OWN SHRIMP

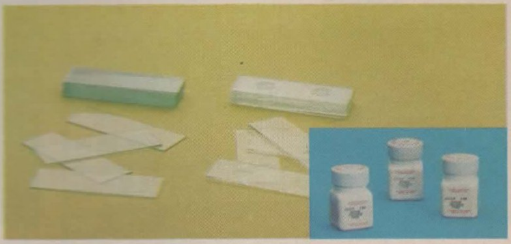
Hatching set lets you raise your own brine shrimp for study purposes. Complete kit includes hatchery, 50X power pencil microscope, well slides (10 cover glass slides and 10 blank slides), glass dropper, Canada balsam, brine shrimp eggs, sea salts and instructional leaflet. Set stores in styrofoam bed. A ready source of brine shrimp in 48 to 74 hours.

Shrimp Hatching Kit E34,833 $38.50

STAINING SET

Prepare slides yourself. Set includes Methylene Blue, Eosin, Fast Green, Delafield's Haematoxylin, Xylol, Safranin, Ethyl Alcohol and Canada Balsam—25 1"X3" blank slides, 50 cover glasses, 3 pith and dropper.

E35,071 $39.50



MAKE YOUR OWN SLIDES

Base Microscope Slide. 72 optical quality glass slides, 1" × 3" each. 1.0mm thick. C40,001 $6.95

100 Slide Cover Glasses. Optical quality. 18mm square. Class 1. 0.17mm thick. C40,002 $7.95

Well Slides. Two depressions on each slide protect specimens or use with live water cultures. 1" × 3". 1.3mm thick. Package of 12. C30,091 $14.95

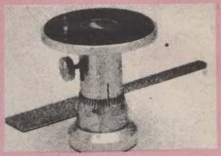
BALSAM MOUNTING FLUID FOR SLIDES

Mount specimens onto glass slides properly with balsam fluid. Bottles have child-proof caps for safety. For easy slide preparation.

Balsam Mounting Fluid E35,224A $6.95

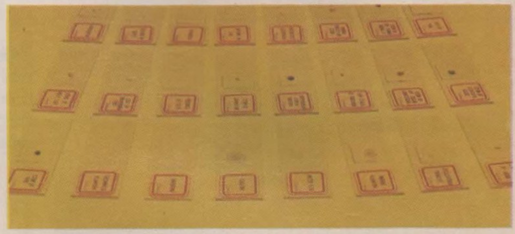
CYLINDER MICROTOME

NEW



This microtome will cut sections to 10 microns, adancing 500 microns for each complete turn. Microtome, section razor contained in a lined wooden cabinet. Height 3", Section razor: 7" long.

Cylinder Microtome F31,535 $199.50



PREPARED SLIDES

Milben scientifically prepared slides. 1" × 3" size. 24 slides per set. Slides are housed in storage box. Included leaflet specifies correct focusing power for each variety.

$29.50

12 insect organs and 12 animals, **F35,072;** 12 plants and 12 tiny creatures, **F35,073;** 12 spiders and disease carriers and 12 honeybee and butterfly parts, **F35,074;** 12 sea life and 12 micro-organisms, **F35,075;** 12 structure of blood and 12 bacteria, **F35,076;** 12 anatomical tissue and 12 organs of mammals, **F35,077;** 12 sky and underground life and 12 bloodsuckers and noxious insects, **F35,078;** 12 magic network of plant tissue and 12 water bloom and aquatic life, **F35,079.**

Prepared Slide Assortment. 25 (1" x 3") slides of plankton, fruitfly, etc. Includes explanatory book. C41,745 $32.50

BOX A BUG

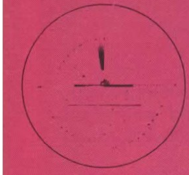
Acrylic boxes have magnifier covers. Study insects or specimens, display materials. Packed in bags of 12.

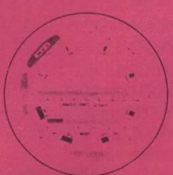
1" Square Box. With 4X magnifier cover. E35,048A $16.50

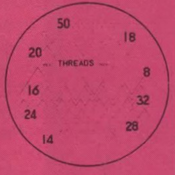
1½" Square Box. With 3X magnifier cover. E35,049 $26.50

Magnifier Buying Guide

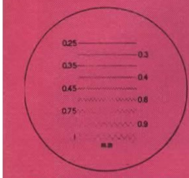
Edmund's 27 mm Glass Etched Reticles

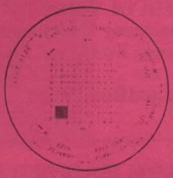

Multi-Scale E30,585

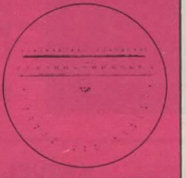

Halftone E30,539

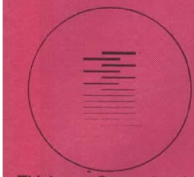


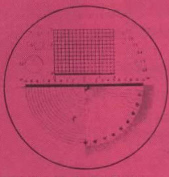
Thread in. E30,591

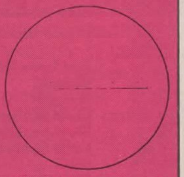

Thread mm E30,590

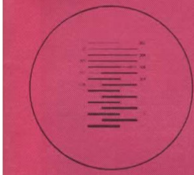

Geological Sand E30,174

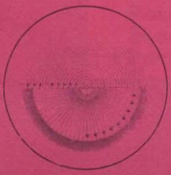

Aerial Photo E30,461

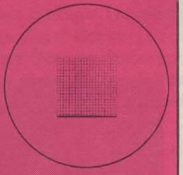

Thickness Gauge (mm) E30,586

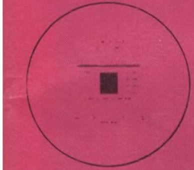

Metric Hole E30,584


Metric Scale E30,323


Thickness Gauge (in) E30,587

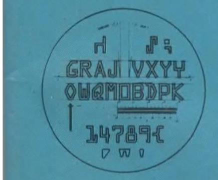

Radius Scale E30,589


MM Square E30,588


Magnetic Ink. E30,284

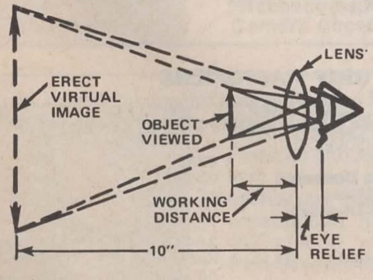
Glass etched reticles offer greater stability. A film reticle can bend, warp & be damaged by solvents. Our reticles are easy to read because the pattern is filled with pigment. Use with 6X or 12X comparators.

Reticles **Each $42.50**



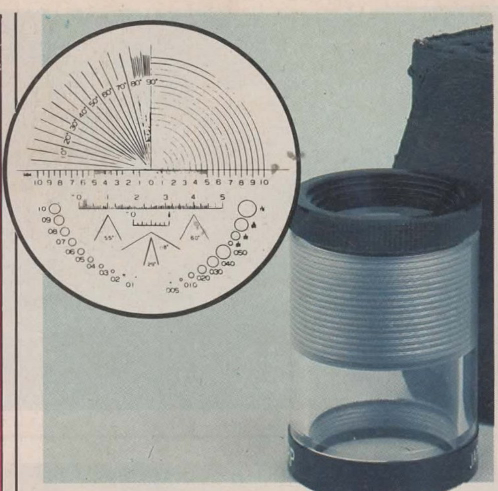
27mm Glass OCR Reticles. For fast "go" or "no go" tests. The character outline block shows minimum/maximum tolerances for the outer & inner stroke borders. Quality glass construction.

OCR Glass Reticle-Size I	E30,642	$42.50
OCR Glass Reticle-Size IV	E30,643	$42.50



Magnification. The above sketch shows your eye looking at a close object. 10" is assumed to be as close as you can focus for comfortable vision. An object only 1" from your eye would be 10 times larger, but out of focus. A magnifier's function is to make this close view possible. Since a 1" focal length lens brings clear vision down to 1" from the eye, an object at this distance is clearly seen, and appears to be 10 times larger than it does when viewed from 10" away. Such a magnifier is commonly called a 10X or 10 power.

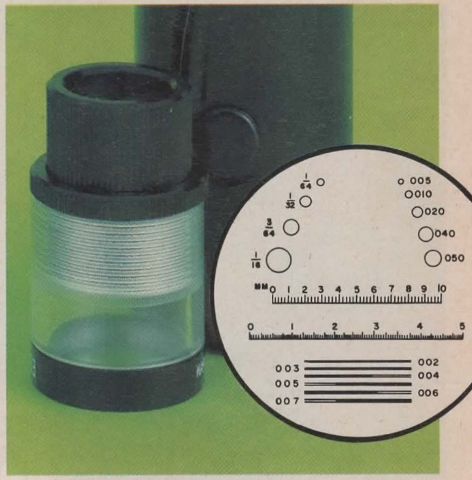
Comparators



6X EDSCORP POCKET COMPARATOR WITH HASTINGS TRIPLET LENS

Clear plastic cell permits outside light to illuminate subject. Check parts, coins, thread sizes, angles. With leather storage case. 27mm reticle.
Eye lens diameter: 0.925".
Height: 1¾".
Weight: 43.3 grams.
Field of view: 1".
Working distance: 1½".
Lens: Hastings Triplet.

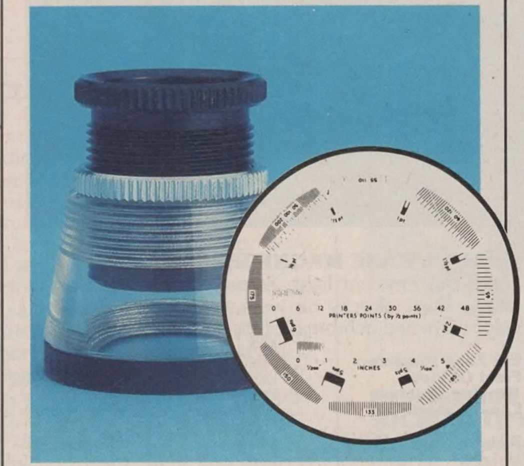
Comparator And Reticle	E41,055	$129.50
Comparator Only	E30,325	$105.50
Reticle Only	E30,585	$42.00



6X JUNIOR COMPARATOR WITH DURABLE ETCHED GLASS RETICLE

Pigment filled reticle pattern will not bend or warp or be damaged by oil and solvents. Distortion-free scales in inches and mm. 21mm reticle has series of parallel lines 0.002" to 0.007" apart to measure material thickness. Clear plastic cell. Leather carrying case.
Eye lens diameter: 0.630".
Height: 1¾".
Weight: 16.6 grams.
Field of view: ¾".
Working distance: 1¾".
Lens system: simple (DCX).

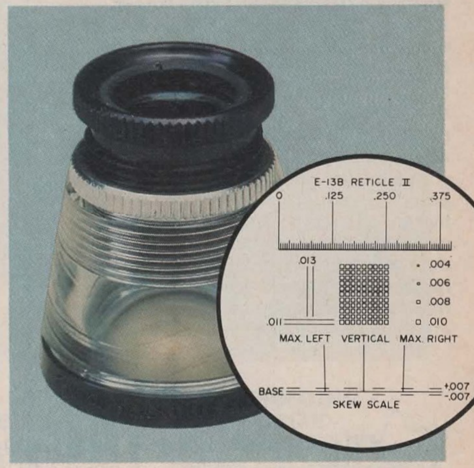
Comparator And Reticle	E30,169	$98.50
Comparator Only	E31,608	$69.50
Reticle Only	E30,186	$42.50



6X GRAPHIC ARTS COMPARATOR FOR TYPE, SPACING, SCREENS.

One linear scale measures to 48 points by ½ point increments. Another, ½" long, has 1/100" and 1/200" divisions. 12 scales measure halftones from 50 to 200 lpi. Also, ¼, ½, 1, 1½, 2, 3, 5 and 6 point blanks. Etched and filled glass reticle is 27 mm diameter. Clear plastic body. Focusing threads with lock.
Eye lens diameter: 0.875".
Height: 1½".
Weight: 33.8 grams.
Field of view: 1".
Working distance: 1¼".
Lens system: simple (DCX).

Comparator And Reticle	E30,551	$88.50
Comparator Only	E31,198	$47.50
Reticle Only	E30,539	$42.00



12X MAGNETIC INK COMPARATOR WITH E-13 B2 RETICLE

An important tool in magnetic ink printing field. Check character skew, width, coverage, voids against American Banking Association tolerances. Clear plastic cell. Focusing threads with lock. 27mm reticle
Eye lens diameter: 0.545".
Height: 1¼".
Weight: 40.05 grams.
Field of view: ½".
Working distance: ½".
Lens system: Kellner-type with AR coating.

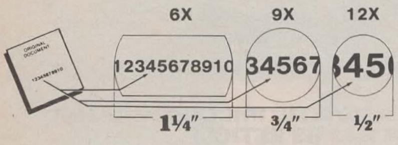
Comparator And Reticle	E30,285	$96.50
Comparator Only	E30,177	$66.50
Reticle Only	E30,284	$42.50

YOUR COMPLETE INDEX IS ON PAGE 111

Pre-Cop-Tic Magnifiers

THE FIVE PRE-COP-TIC ACHROMATIC MAGNIFIERS WE'VE LISTED ON THIS PAGE ARE THE FINEST MADE...EACH GIVES A LARGE FLAT FIELD WITH CRYSTAL CLEAR DEFINITION

Ideal for close up examinations. Engineered to the highest optical standards. Each provides a clear and sharp image right to the edge of the wide flat field. Achromatic color corrected three element lens system assures you of top performance everytime. Protective gaskets seal both the top and bottom of each lens cell to keep internal surface free of dust and moisture. Each is pre-tested at the factory and guaranteed against defects in materials and workmanship. Here's an example of the magnification power at:



THREE MAGNIFICATIONS AVAILABLE

There is a Pre-Cop-Tic achromatic magnifier to meet your exacting magnification requirement. The illustration above demonstrates the differences between 6X, 9X and 12X. Four of our Pre-Cop-Tic achromatic magnifiers are available in either 9X or 12X, and only magnifier F42,769 is available in 6X.

YOUR COMPLETE INDEX IS ON PAGE 111

6X WIDE FIELD MAGNIFIER

Incorporates wide field of view and 1½" working space under lens. Clear acrylic base with cutaway opening is designed for accessibility of tools within magnified field. Two-achromatic (color-corrected), AR coated lens system housed in rugged aluminum body. Lock ring. For engravers, artists, printers, etc.

Eye Lens Diameter: 1½".
Height: 3".
Weight: 6.6 ounces
Field of View: 1½".
Working Distance: 1".
Lens System: double achromats.
E42,769 $89.50
Magnifier With Leather Case
E31,327 $102.50

SWIVEL ARM MAGNIFIER ROTATES 360 DEGREES

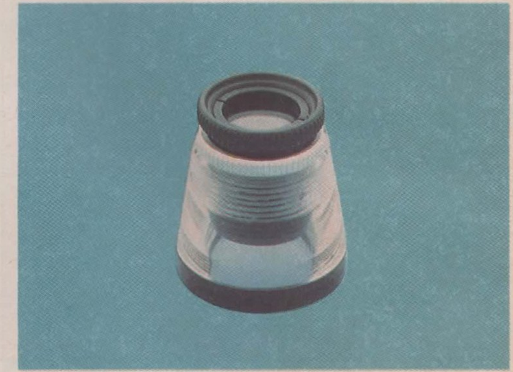
Superb for examining halftone dots. Rotates to any position. Stainless steel tension spring prevents wobble, holds position.

	12X	9X
Eye Lens Diameter:	0.545"	0.565"
Height:	1¼"	1¼"
Weight:	1.78 ounces	1.81 ounces
Field of View:	½"	¾"
Working Distance:	½"	¾"
Lens System:	Kellner-type AR coated	Kellner-type AR coated
Item/Price	E30,010/$59.50	E30,009/$58.50
	15X C49,630	$59.95
	22X C49,629	$64.95

OPAQUE BASE MAGNIFIERS

Shuts out ambient light. Superb for use with light tables. Rests directly on work area. Three element, color-corrected achromatic lens system.

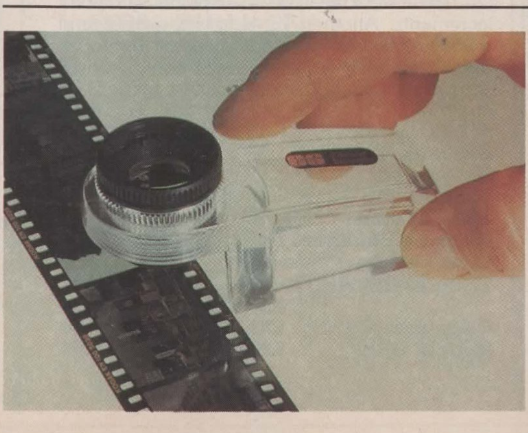
	12X	9X
Eye Lens Diameter:	0.545"	0.565"
Field Of View:	½"	¾"
Working Distance	½"	¾"
Lens System:	Kellner-type AR coated	Kellner-type AR coated
Weight:	1.41 ounces	1.44 ounces
Height:	1¼"	1¼"
Item:	E30,054	E30,056
Price:	$59.50	$58.50



TRANSPARENT BASE MAGNIFIERS

Magnifiers rest directly on work area for pinpoint examinations. Clear cell admits light to subject under view. Ideal for proofreaders or determining ink absorption.

	12X	9X
Eye Lens Diameter:	0.545"	0.565"
Height:	1¼"	1¼"
Field of View:	½"	¾"
Working Distance:	½".	¾"
Weight:	1.41 ounces	1.44 ounces
Lens System:	AR Coated Kellner-type	AR Coated Kellner-type
Item/Price	E30,055/$59.50	E30,057/$58.50



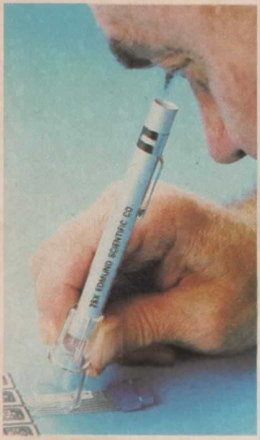
EASY GRIP MAGNIFIERS

Housed in acid-resistant transparent base. Clear base won't block light. Easy to pick up even when wearing rubber gloves.

	12X	9X
Eye Lens Diameter:	0.545"	0.565"
Field of View:	½"	¾"
Working Distance:	½".	¾"
Height:	1¼"	1¼"
Weight:	2.04 ounces	2.07 ounces
Lens System:	Kellner-type AR coated	Kellner-type AR Coated
Item:	E30,223	E30,224
Price:	$69.50	$68.50

ORDER FROM US DIRECT

Efstonsciene has only one location, and services all orders directly from our Toronto, Ontario premises.



FINE DETAIL INSPECTIONS ARE A SNAP WITH THIS ECONOMICAL EDMUND POCKET MICROSCOPE...AVAILABLE IN 25X OR 50X

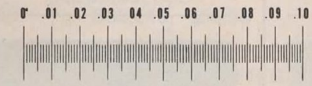
Carry this microscope like a pen. It is only 5″ long and has a brushed aluminum finish and convenient pocket clip. Precision glass lens system provides distortion-free detail inspection. Clear plastic mount admits light to subject under view and holds scope at proper focus. Invaluable for the engineer, tool maker, inspector, laboratory technician, researcher, collector and hobbyist. Our pocket microscope makes a wonderful gift for anyone, and is reasonable enough in price that you can outfit your entire staff or class. Choose between 25X and 50X microscopes.

Magnification Power		1-5	6-10	11-25
25X	31,853B	$26.50 ea.	$22.50 ea.	$20.50 ea.
50X	34,609B	$28.50 ea.	$24.50 ea.	$22.50 ea.

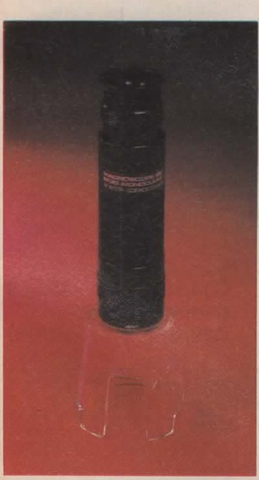
DIRECT MEASUREMENT MICROSCOPES FOR CLOSE EXAMINATIONS

Power direct measuring scopes are no larger than a fountain pen. Available in your choice of a measuring glass reticle in metric or inch scales. Can be purchased with or without optical clear plastic base. Stands only 4¼″ high and weighs two ounces. 50X for quick, close examinations to detect flaws or imperfections, make surface measurements or examine fibers or printing. Base (1½″ O.D.) converts the unit to a free standing microscope that can be focused and locked. The inch reticle length is 1⁄10″ with 0.001″ divisions. The millimeter reticle length is 2.5mm with divisions of .01mm.

Pocket Scope (inches)	E30,225	$74.50
Scope And Base (inches)	E60,465	$109.50
Pocket Scope (mm)	E42,215	$76.50
Scope And Base (mm)	E61,210	$109.50
Pocket Scope Without Reticle	C30,013	$58.50



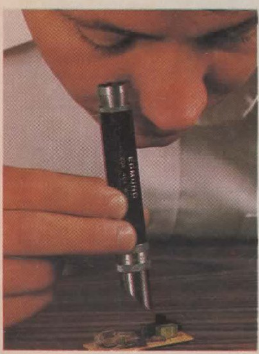
INCH RETICLE
You make direct readings from reticle; no calculations necessary.



CHECK IT OUT...UP CLOSE AND AT A DISTANCE

Hand-held 25X combination microscope and 8 × 30 monocular provides an extraordinary view whether it be a spot, up-close inspection or scanning the action on the playing field. Eight millimeter field of view microscope with positionally-correct image. See every flaw or engraving mark on your stamps. Useful for quality control inspection checks. Scan 35mm slide transparencies with ease for detail. When you are finished using it as a microscope, unscrew the clear plastic base and tote the monocular along to sporting events, on camping trips or to the theater. Overall length, including base, is 9″. Monocular portion is 5″ long. Built-in scale reticle in monocular eyepiece. Rugged metal and plastic body. Microscope base has cutaway opening for accessibility of working tools. Unit weighs just 6.3 ounces. Knurled focus adjustments. No ordinary piece of equipment. Useful at home, office and classroom. Rubber eyeguard. Lens cap protects against dust.

Microscope/Monocular	C33,527	$119.50
Camera Accessory	C49,659	$26.50



HANDY 20X, 40X AND 60X PEN-SIZED MICROSCOPE

Powerful enough to give quick efficient examinations of any item requiring close scrutiny. This compact, hand-held field microscope offers 20X, 40X & 60X magnification. All-metal construction, flat field of view, rotating focus adjustment. 4¾″ x ⅝″.

Pen Sized Scope	E31,309	$74.50

EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4

OUR 40X ILLUMINATING MICROSCOPE IS POCKETSIZE AND PRICED AT JUST $20.50

Here is the perfect "carry-with-you" microscope. Just 3⅜″ × 1¾″ × ¾″, microscope has optics which let you see objects 40 times their actual size. Built-in light source (uses two AAA batteries—not included). Easy adjust focusing wheel. A retractable condenser lens pinpoints the light, allowing you to clearly examine any object you desire. Ideal for inspecting gems, photos, stamps, coins. Discover the hidden worlds of plants and insects, more. With case.

	1-5	6-10	11-20
E35,001B	$20.50 each	$18.50 each	$16.50 each

Extra Bulb For Microscope E34,190 $6.95

EDMUND
JAPAN

20X-40X-60X MICROSCOPE

The self standing base permits you to work with both hands free. A unique pocket microscope, it offers the advantage of varying magnification applicable to numerous uses in the shop, laboratory & field. The handy slide movement base with stage clip secures the specimen for optimum scrutiny in almost any viewing position. Offers the versatility of three magnifications: 20X, 40X & 60X. 4¼ in. long.

Microscope With Stand
E31,310 $99.50

FREE STANDING POCKET-SIZE 50X MICROSCOPE

Features fully coated optics, precision focusing, clear acrylic base and wooden case. 2mm (0.08″) field of view, height: 3⅞″ closed.

50X Microscope
C42,693 $99.50
25X Microscope
C49,660 $89.50

Extreme care is given to each order we receive. It will be checked and re-checked to insure its safe arrival. But, if damage or discrepancy should occur, Call: (416) 787-4581

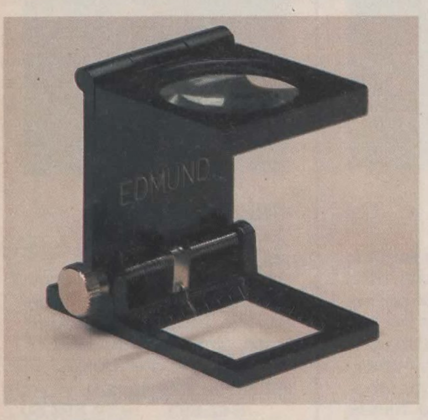
Linen Testers

EDMUND 6X AND 9X LINEN AND PRODUCT TESTERS

Unbeatable for counting threads in textiles, examining printing, industrial inspections, engraving checks, etc. Linen and product testers rest directly on subject to be viewed. Fold flat for portability. Black anodized aluminum stand. Built-in graduated scale in base.

6X Tester
Lens Diameter: 1 1/16″
Working Distance: 1½″
C40,030 **$12.95**

9X Tester
Lens Diameter: ½″
Working Distance: 1″
C40,031 **$10.95**

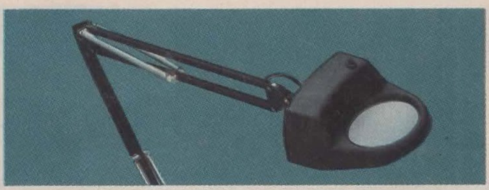


6X LINEN AND PRODUCT TESTER WITH MOVABLE POINTER IN BASE

Excellent for counting threads in textiles, examining stamps, printing, engravings, circuit boards, etc. Linen and product tester has 1 1/16″ lens diameter and 1½″ working distance. Features a folding aluminum stand for hands-free work. Includes graduated scale at base. Comes with movable pointer for counting. Here's a magnifier you can carry in your pocket for a really close-up inspection anytime.

6X Linen and Product Tester
C33,415 **$19.50**

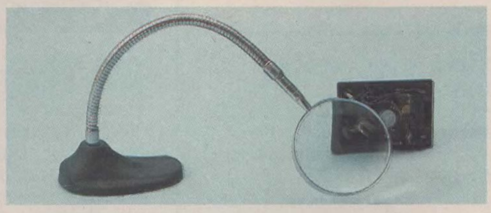
Work Station Magnifiers



ENLIGHTEN AND ENLARGE

Work station lamp has 4½″ x 3″, 2X magnifying lens and bright 40W incandescent light. Three-joint swiveling arm has 30″ reach and rotates 360 degrees. 9″ field of view. 10″ working distance. 110V black metal and nylon construction. Lamp mounts easily on desk or drawing table.

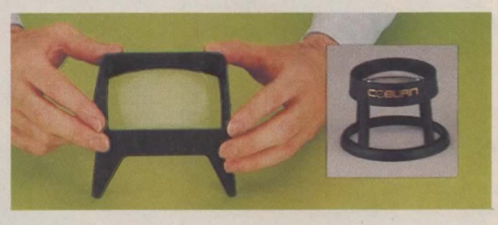
Magnifying Lamp **C31,826** **$59.95**



SELF-STANDING GOOSENECK MAGNIFIER

Magnifier stands on its own, freeing your hands to work on the project. 2X for wide field. The 4″ diameter glass, optical quality lens is mounted in chrome-plated brass. 8″ working distance. 5″ field of view. 12″ gooseneck lead. Weighted black metal base.

Self-Standing Magnifier **C70,241** **$31.50**



HANDS-FREE STAND MAGNIFIERS

Rests directly on work area. Optical quality acrylic biconvex aspheric (distortion reducing) lenses. High impact polystyrene frames. Fixed focus.

Size	Magnification	Focal Distance	Diopters	Item/Price
3¾″ × 2¾″	2.3X	3¼″ (85mm)	8	E42,722/$143.50
2½″ × 2″	2.7X	3¼″ (85mm)	11	E35,331/$119.50
1¾″ Dia.	5X	2″ (50mm)	20	E35,332/$ 69.50
1½″ dia.	7X	1¼″ (34mm)	28	E35,333/$ 59.50

YOUR COMPLETE INDEX
IS ON PAGE 111

5″ DIAMETER LENS MAGNIFIER LAMP

2X magnifier lamp has 30″ reach. Mounted on a three-joint swiveling arm, lamp rotates 360 degrees. 22W, 110V circline fluorescent lamp bathes work area with shadow-free light. 10″ field of view. 8″ working distance. Aluminum. With mounting bracket.

Magnifier Lamp	**C83,019**	**$129.50**
Table Base	**C49,676**	**$59.50**
Floor Stand 36″ high	**C49,677**	**$69.75**

HANDS-FREE MAGNI-VIEWER

Lightweight Bausch and Lomb magnifier hangs around your neck, leaving your hands free to work on assembly or repair projects. 4″ x 6″ optical acrylic viewing area. 2X magnification. 15″ working distance. 10″ field of view. Powerful enough to magnify small parts for easy assembly or a full book page.

Magni-Viewer
C61,241 **$21.95**

EXTRA HANDS

Work station magnifier provides extra hands for tinkerers. Two alligator spring clamps hold objects for soldering, glueing, assembling, positioning, more. With 2¾″ diameter inspection lens which rotates 360 degrees. 3X magnification. 4″ field of view. 4″ working distance. Sturdy one pound station base. Black and silver. Made in the U.S.A.

Work Station
C34,768 **$36.50**
Without Magnifier
C49,169 **$26.50**

BAUSCH AND LOMB ILLUMINATING MAGNIFIER WITH STEEL ROD STAND

Versatile tool provides 4½″ of working distance under magnifier. Wide range of uses in industry, schools, office and lab. Both the lens and the light are adjustable. With the lens tilted, hand-held objects can be viewed. Or use the hands-free working space under the lens. 2″ X 4″ lens. 2X magnification. Seven watt lamp (included). Chromium-plated steel rod stand has black plastic coating on feet. Gray plastic lens mount and lamp housing. 115V. American made. Scratch-resistant optical glass lens.

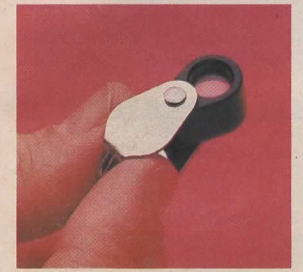
Illuminating Stand Magnifier
C61,213 **$19.50**

Extreme care is given to each order we receive. It will be checked and re-checked to insure its safe arrival. But, if damage or discrepancy should occur, Call: (416) 787-4581

POCKET MAGNIFIERS FROM BAUSCH & LOMB

Single, double and triple lens systems. Two lens system provides three powers while three lens system provides seven different powers. Optical glass lenses.

5X Single Lens Magnifier. 1″ lens size; 2″ focal distance; 20 diopters C35,041 $11.95
4X-9X Double Lens Magnifier. 1″ lens size; 2.5″ to 1.1″ focal distance; 16 to 36 diopters. C35,042 $17.95
5X-12X Double Lens Magnifier. ¾″ lens size; 2″ to 0.8″ focal distance; 20 to 48 diopters. C35,043 $19.50
5X-20X Triple Lens Magnifier. ¾″ lens size; 2″ to 0.5″ focal distance; 20 to 80 diopters. C31,142 $22.50



BAUSCH & LOMB HASTINGS TRIPLET

20X magnification lens in swing-away, nickel-plated case. ¾″ x ½″ when folded. 3 lenses are bonded together to form a compound lens.

Lens Dia.: ¼″ (7mm)
Focal Distance: ¼″
Field of View: ⅜″
Diopters: 80D
C35,040 $56.50

VERNIER MAGNIFIER

Inexpensive and pocket-size 2 power magnifier is useful with vernier calipers, height gauges or any metal rule. Provides a clear, undistorted view of scale lines and figures. 1″ X ¾″ lens. About ½″ working distance. Clear plastic body admits light from all directions. Permanent magnets in body hold magnifier securely on any ferrous metal. 8 diopter.
E35,026 $16.95

GRAPHIC ARTS MAGNIFIER LENS

Drawing board accessory provides about 2.5X magnification and a 3″ working distance. 2¼″ diameter. 2″ high. f:4.5. Weighs 4 ounces. Provides long eye relief and wide flat field. Black anodized aluminum barrel. Japanese lens was designed for copying equipment.
E34,757 $16.50

FOLDING POCKET MAGNIFIER

Handy 4X magnifier slips into your pocket. 2″ square. Double convex lens is mounted in plastic frame. Comes with simulated leather carrying case.
C40,024 $6.95
C49,024A 10 for $54.50

EDMUND'S THREE-IN-ONE COMPACT OPTICAL SYSTEM. IT'S A MAGNIFIER, A MICROSCOPE AND A TELESCOPE IN ONE PALM-SIZED INSTRUMENT

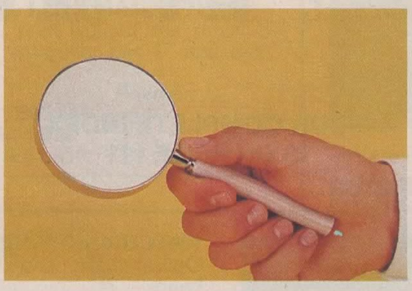
Carry this precision optical instrument with you everywhere and always be prepared for any magnifying need. For viewing distant objects it's a 5X telescope. To explore the ultra-miniature, it's a powerful 40X microscope. And to examine fine detail, it's a handy 10X magnifier. Black anodized metal body, precision coated glass optics and clear plexiglass loupe are designed for long life and rugged use. Compact 3″ long x 1″ diameter instrument fits neatly in your pocket or briefcase. Padded carrying case included.

5X Telescope, 40X Microscope, 10X Magnifier E33,914 $98.50

THE OCTOSCOP MAGNIFIER—HERE'S EIGHT MAGNIFIERS IN ONE HANDY TOOL

Here's the most versatile magnifier we've found. It's really eight magnifiers in one. You can have a 2X, 4X, 6X, 10X, 14X, 18X, 20X, 28X magnifications by simply turning the 2 frame wings against each other. The optical elements (2 of them) are precision optical cemented achromats. The entire instrument is less than 3″ long and comes with leather case and strap. Excellent for school, industry and hobby uses.

Octoscop E33,115 $153.50

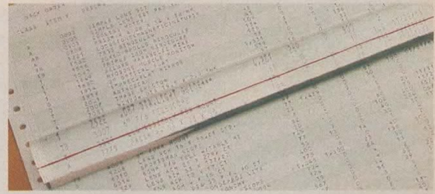


MIRROR, MIRROR MAGNIFIER

Magnifier includes a built-in first surface aluminized mirror. Dandy small parts tool. Ideal around the home for contact lens wearers. 4⅜″ handle. Mirror magnifier should be cared for and cleaned like any first surface mirror.

Power: 2X
Focal Length: 5″
Magnifying Mirror
E35,025 $48.50

YOUR COMPLETE INDEX
IS ON PAGE 111



SAVE YOUR EYES WHILE SCANNING COMPUTER REPORTS

2X Bar Magnifier is designed to ease the reading of computer printouts. A must for those who have to wade through poor quality printouts. Build-in red line aids in keeping the eyes focused on the right area. 14″ long and 1¼″ wide so you can read an entire line without having to move the bar. E33,808 $39.50
On Sale $29.50

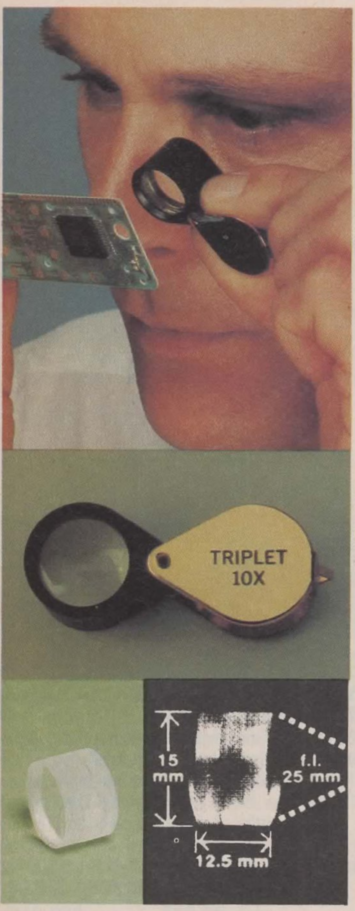
CODDINGTON POCKET MAGNIFIERS

Sharp, clear images are provided through a single thick lens with a central groove diaphragm. American-made. Magnifiers have a swing-away, nickel-plated case which doubles as a handle.

5X Pocket Coddington
Focal Distance: 2″/5.1 CM
Diopters: 20D C35,044 $33.95
10X Pocket Coddington
Focal Distance: 1″/2.5 CM
Diopters: 40D C35,045 $35.95
20X Pocket Coddington
Focal Distance: ½″/1.3 CM
Diopters: 80D C35,046 $37.95

EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4
(416) 787-4581

Hastings Triplet



THE KING OF MAGNIFIERS... THE HASTINGS TRIPLET

The most popular magnifier available today. 10 power. Completely color-corrected, flat-field, cemented lens system. Unlike many Hastings Triplet magnifiers on the market, ours are edged and centered. Compound lens provides a distinct clear, sharp magnified image. The lenses in the series are designed to interact with each other, contributing to the reduction or elimination of color distortion. Sturdily mounted in a black anodized metal cell, the lens system swings into a protective brass case. Case doubles as a handle. Only ¾" x 1½" when closed. The triplet has a ½" diameter lens and a 9/16" field of view. 1" (25mm) f.l. Used worldwide by jewelers, engravers, machinists, manufacturers, printers, photo-finishers, proofreaders and hobbyists. Applications vary from flaw inspections to fine detail studies.

Hastings Triplet Magnifier
E30,344 $51.50

UNMOUNTED HASTINGS TRIPLET MAGNIFIER

19/32" (15mm) diameter. OEM applications in fiber optic instruments, automatic test sets, simulators, weapons and quality control. Quantity prices are available.

Unmounted Triplet
E30,120 $44.50

ORDER BY PHONE
416-787-4581
OR BY TELEX
06-969864

Magnifiers You Wear

FLIP-UP BINOCULAR MAGNIFIERS

These binocular magnifiers eliminate squinting while providing great depth of field. Recessed Lucite lens. Eye shade. Fully adjustable, padded leatherette headband.

1.75X Magnifier
Working Distance: 14"
C70,699 $32.50

Accessory 2.5X swing-in loupe for F70,699.
C40,736 $10.50

2.25X Magnifier
Working Distance: 8"
C70,698 $32.50

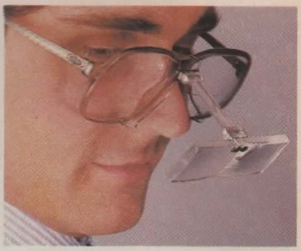
2.75X Magnifier
Working Distance: 6"
C70,697 $34.50

TELESIGHT-MAGNIFIERS REDUCE EYE STRAIN

These convenient magnifiers provide eyeglass users with enlarged views without loss of correction due to the glasses. Clamp to eyeglass frame; swing easily out of the way when not needed. Weigh about one ounce. For craftsmen, jewelers, hobbyists.

2X Telesight
Working Distance: 10"
C50,240 $41.50

3X Telesight
Working Distance: 5"
C50,242 $46.75



CLIP-ON BINOCULAR MAGNIFIERS

Optically correct magnifiers leave both hands free for work. Tension clip holds secure. Weighs just two ounces. Clips easily onto any eyeglass frame. With carrying case. Measures about 3½"L × 1¼"H × ⅛"T.

$29.95 each

1.75X Binocular Magnifier. 14" working distance. C41,729;

2.25X Binocular Magnifier. 8" working distance. C41,730;

2.75X Binocular Magnifier. 6" working distance. C41,731;

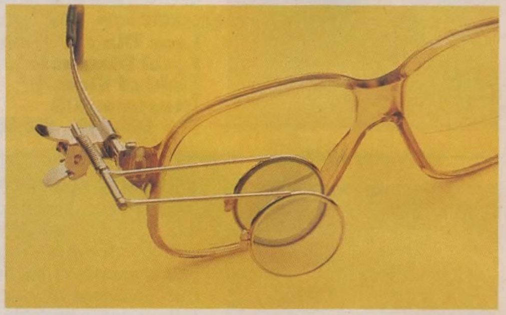
3.5X Binocular Magnifier. 4" working distance. C41,732

EASY-ON SINGLE EYEGLASS LOUPES

Spring steel clips. 360 degree loop. Fully adjustable. Precision lenses. Used by jewelers, trade craftsmen, industrial technicians and hobbyists.

	Focal Distance	Lens Diameter	Diopters	Item	Price
2X Behr	5"	24mm	8	C40,510	$19.95
4X Behr	2.5"	24mm	16	C40,511	$19.95
3X Bausch & Lomb	3.3"	24mm	12	C35,033	$19.95
5X Bausch & Lomb	2"	24mm	20	C35,034	$20.95
7X Bausch & Lomb	1.5"	24mm	28	C35,035	$31.50

YOUR COMPLETE INDEX IS ON PAGE 111

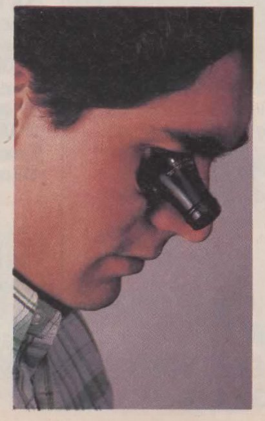


DOUBLE LOUPES FOR EXTRA MAGNIFICATION POWER

Double loupes provide extra magnification power compared to single loupes. Easy mount to either left or right side of eyeglass frame. Precision ground lenses. Spring steel clip.

	Focal Distance	Lens Diameter	Diopters	Item	Price
3X-5X Bausch & Lomb	3.3".2"	24mm. 20mm.	12.20	C35,037	$31.95
4X-7X Bausch & Lomb	2.5", 1.5"	24mm. 17mm.	16-28	C35,038	$32.50

4X-7X Bausch & Lomb Double Loupe With Glare Reducing Ray-Ban Green Lens. Focal distance: 1.5", 2.5". Lens diameter: 24mm, 17mm. Diopters: 16-28. C35,039 $32.95



WATCHMAKER EYELOUPES WITH AND WITHOUT BANDS

Optical quality lenses. Black lens cell. Choose between loupes with or without headbands.

	Without Headband Item/Price		With Headband Item/Price	
3X Bausch And Lomb	C35,050	$11.95	E35,055	$23.50
7X Bausch And Lomb	C35,051	$13.95	E35,056	$29.50
4X-7X Bausch And Lomb	C35,053	$19.95	E35,057	$34.50
10X Bausch And Lomb Hastings Triplet	E35,054	$89.50		
Spectacle Holder For Bausch And Lomb Eyeloupes			E35,059	$4.95
5X Selsi	E40,142	$13.50	E40,146	$16.50

12X or 5X Dual Power Selsi Loupe. 2" working distance; 1" lens diameter. Without headband. E40,150 $19.95

10X FLASHLIGHT MAGNIFIER

10X magnifier enlarges fine map details. Flashlight provides illumination at desk or car. Uses two "C" batteries (not included). 7″ long flashlight-magnifier.

C35,676 $17.50

ADJUSTABLE MAGNIFIER

Powerful 8X magnification. Turn lens ring to adjust focus. Acrylic two-lens system. Stands 1⅞″ high. 9/10″ lens dia. Gray plastic top, clear base.

C35,674 $9.50

ECONOMY BINOCULAR MAGNIFIER

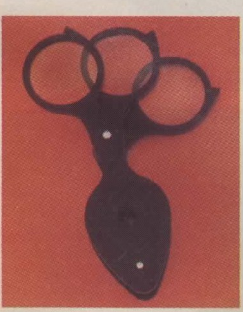
A favorite of hobbyists and shop workers handling detail work over long periods of time. Scratch-resistant acrylic lenses give 2½X magnification and 3D viewing. Padded, adjustable headband. Can be worn over eyeglasses. 10″ working distance. Lens portion tilts up when not in use.

C35,681 $27.50

READING WINDOW VISION AID

Useful in assisting ocular convergence, the action of both eyes focusing on the same subject at the same time. Perfect for reviewing lengthy, data-filled business reports. Alternating rows of blue, pink and yellow horizontal stripes.

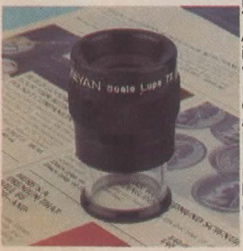
8″×11″ Size.	**C35,704A**	**$8.50**
4¼″×5½″ Size.	**C35,703**	**$5.95**



FOLDING 3-LENS POCKET MAGNIFIER

Optical quality double convex lenses. 3X, 6X and 9X magnifications. Lenses are ⅞″ in diameter. Black plastic frame around lenses and carrying case, which doubles as a handle.

E40,032 $19.25



POCKET COMPARATOR OR MAGNIFIER

A most useful optical tool in measuring up to 20mm with .10mm graduation on reticle. Twist focus to produce very sharp image and accurate measuring. 2" high, 1½" dia. Reticle removable to be used as magnifier only. **With leather case limited quantities.**

8X C49,681 $56.50
10X C49,680 $59.50

ZOOM POCKET MAGNIFIER

Originally built as a zoom 20-32mm f/1.5 projection lens. Functions nicely as a zoom pocket-sized magnifier/microscope by using it in reverse. 5X-8X magnification. 30-48mm f.l. Mounted in a metal barrel 1⅛″ dia. × 2⅞″ long.

E35,657 $23.50

SCANNING MAGNIFIER

Low vision reading aid brightens and enlarges fine print, from telephone books to stock market prices and blueprints. 2″×3″ oval shaped magnifier; approx. 2X. Lightweight shatterproof optical-quality plastic lens. With pouch.

C35,882 $7.50

ASPHERIC READER

Hand-held reading magnifier from Bausch and Lomb. 5X, 2″ (50mm) diameter lens. 2″ focal distance. Optical-quality acrylic lens, anti-reflection coated. 20 diopters. Black plastic handle.

E35,672 $39.50

FRESNEL LENS MAGNIFIERS

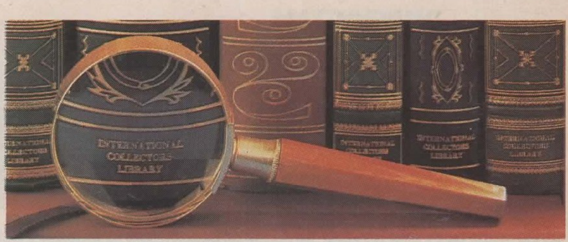
Scan fine print without eye strain. 3 sizes. 3X magnifier has 1″ and 8cm scales.

	Power	
1½″x3½″/**E35,666**	3X	$2.25
4″x5½″/**E35,936**	2.5X	$8.75
8½″x11″/**E31,919**	2X	$11.75

SURPLUS HAND MAGNIFIER

Originally $80. Now less than half that. English import magnifier has biconvex aspheric acrylic lens mounted in a black high-impact polystyrene frame. 2.3X magnification. 4¾″ focal length. 8 diopters. Approx. 4″ × 3″.

E35,324 $39.50



GOLD PLATED ROUND READER MAGNIFIERS

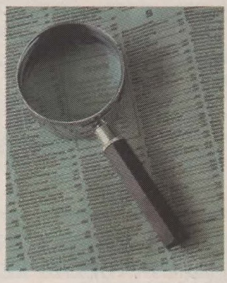
Approximate 2X magnification. 7″-12″ working distance. Gold-plated brass frame. Brown hexagonal plastic handle.

2½″ Dia. Lens6 diopters.	**3x**	**E35,668**	**$49.50**
3″ Dia. Lens. 5.5 diopters	**2½x**	**E35,669**	**$54.50**
3½″ Dia. Lens5 diopters.	**2x**	**E35,670**	**$59.50**
4″ Dia. Lens. 4 diopters.	**2x**	**E35,671**	**$68.50.**

EASY TO USE 50MM STAMP LOUPE

Optical-quality aspheric plastic lens is mounted in aluminum frame. 2″ (50mm) diameter lens. 2X .45mm focal distance. Inspect stamps, detail flaws, more. Handy desk top accessory.

C35,673 $15.50



8X COMPOUND LENS MAGNIFIER

Sharp, clear magnified images. 8X compound lens system of scratch-resistant acrylic. Shatterproof. Stainless steel frame. 2½″ diameter lens. Magnifier has black handle and weighs about 5 ounces. Scan fine print. Inspect precision parts.

Compound Lens Magnifier
E35,359 $59.50

FOLDING BIFOCAL

Large 2½″ bifocal magnifier folds into vinyl pouch which doubles as a handle. 2X magnifier is ideal for phone numbers, etc. and the powerful 3X bifocal inset (¾″ dia.) is handy for extra fine detail. **C35,675 $3.95**

3.5X ASPHERIC STAND MAGNIFIER

Undistorted clarity, acrylic lens, anti-reflection coated 2½″ dia. (50mm) lens. 2″ f.l. 20 diopters. Clear base.

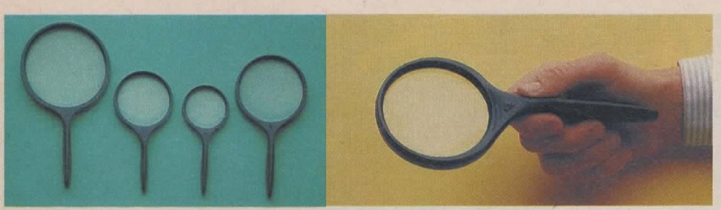
C35,664 $16.50

VIEW LOUPE WITH FILM ATTACHMENT

3″ (75mm) lens diameter. 2.5X magnification (manufacturer says 5X). Two simple lens system, molded. Clear base admits light to subject under view. Includes 0 to 30mm scale. With film attachment. Red body. Optical quality lens.

C35,667 $10.50

Hand Held Magnifiers



THE ROUND READER MAGNIFIER...MODERNIZED BY BAUSCH AND LOMB

Handle is shaped to better conform with the natural way of holding a magnifier. Soft gray handle and frame are contemporary in styling. Four sizes. Optical quality lens. Lens is recessed in one piece frame to prevent chips and scratches.

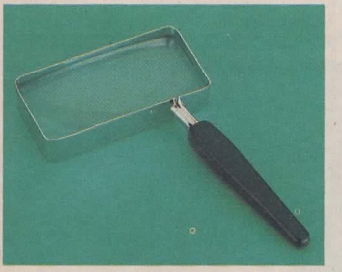
Size	Power	Focal Distance	Item	Price
2″	2X	6″/15.2 cm	C35,031	$19.95
3″	2X	8″/20.3 cm	C42,716	$21.95
4″	2X	10″/25.4 cm	C35,032	$27.95
5″	2X	13″/33.0 cm	C42,717	$38.95

EFSTONSCIENCE INC.
Science & Technology Agora

HAND-HELD READER MAGNIFIERS

Scan fine print, important documents and more with these versatile magnifiers. Round lenses are optically ground and polished. Chrome rim. Plastic handles. Three sizes.

Size	Power	Working Distance	Item	Price
2½″	2X	7″	C35,029	$6.50
3½″	2X	8″	C35,030	$10.50
4½″	2X	12″	C60,354	$13.95



RECTANGULAR READER MAGNIFIER

Quality 4″ x 2″ reading glass has optically ground and polished lens. Polished chrome rim. 2X magnification. Round solid plastic handle. Working distance is 10″.

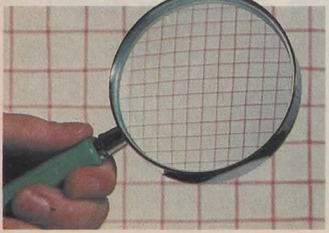
Rectangular Magnifier
C35,028 $13.50

YOUR COMPLETE INDEX IS ON PAGE 111

MINIATURE GERMAN-MADE FLAT FIELD MAGNIFIER

6X magnification. Made in the late 1940s in West Germany. Chromed brass handle. Black anodized brass 1″ diameter cell. 2¾″ long. Two-lens system holds a real flat field even at 6X.

Flat Field Magnifier
E34,960 $23.50



REDUCING GLASS MAKES OBJECTS APPEAR SMALLER

The higher you raise the glass...the smaller the object will appear. Ideal aid for artists, designers, photographers and X-ray technicians. 3½″ diameter with a 4⅜″ handle. Glass is mounted in a metal ring and the handle is plastic. E33,460 $39.95

Light Tables For Use With Magnifiers

CARRY THESE QUALITY TRACING TABLES WITH YOU

Beautifully finished natural birch wood frame tracing tables are ideal for viewing transparencies, slide sorting or ad layout preparation. Opal plexiglass top. Built-in reflectors. Cool fluorescent bulbs. Adjustable legs for tilting. 8′ cord. Handy carrying handle.

4″ × 11″ × 18″. With two 15W bulbs. Weighs 8½ pounds.
E34,122 $209.50

4″ × 16″ × 18″. With two 15W bulbs. Weighs 10½ pounds.
E34,123 $259.50

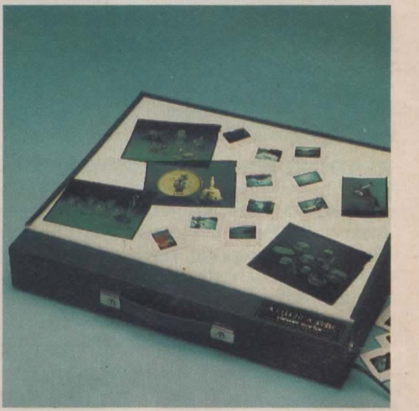
4″ × 24″ × 18″. With four 20W bulbs. Weighs 16½ pounds.
E34,124 $389.50

MODULAR EVENLITE SYSTEM IS THE PROFESSIONAL APPROACH TO SLIDE SORTING AND VIEWING

Easel-style slide sorter and light box feature cool, even light without irritating shadows or hot spots. Back rack aluminum stand supports sorter at a comfortable 60 degree angle. Sorter (17¼″ x 4¼″ x 12″) has six racks which will handle 42 slides. Spill proof tracks. Light box has large 11¼″ x 14″ flat working area. Convenient trays hold slides while you are working. Weighs just 2.5 pounds.

Viewing System
E33,818 $299.50

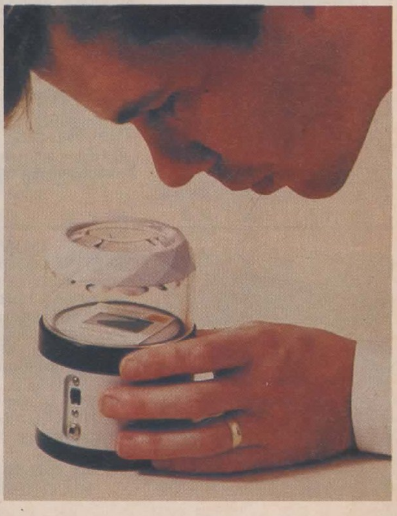
PORTABLE AND LIGHTWEIGHT VIEWING SYSTEM GOES WHERE YOU GO



This acculight system is designed for those who want a transparency, X-ray or slide viewing system that sets up in a snap anywhere. Mounts easily on a wall. Sets up in seconds on a table. Portable. ANSI standard 5000° 3K light source with CRI rating of 91+. Comes with a 15 watt lamp. 24½″ x 16″ x 6″. Comes with handy carrying handle. Recommended for business, education and home hobbyists.

Portable Viewer
C80,294 $149.95

MINI DESK TOP LIGHT TABLE WON'T GET IN THE WAY. VIEW IT AT YOUR DESK INSTEAD OF HAVING TO LOCATE A LIGHT TABLE.



Examine slides, drawings and more with this handy table that sits on your desk. Saves time and effort. Powerful 5X magnifier picks up the smallest of details. 2⅛″ x 3¼″ diameter light table works on either two "AA" batteries or with optional AC adapter.

Light Table & Magnifier
E34,212 $62.50

5X Magnifier
E34,211 $29.50

Mini Light Table. Includes spare bulb. C34,210 $26.95

AC Adapter
E33,135 $25.50

Illuminating Magnifiers

BAUSCH & LOMB CODDINGTONS

Single thick lens with central groove diaphragm for high resolution images. Illumination through the groove provides exceptional clarity. Takes two "AA" cells.

	5X	10X
Working Distance:	**2″/2.5 CM**	**1″/2.5 CM**
Diopters:	**20D**	**40D**
Item	C35,027	C42,812
Price	$36.95	$38.95

BAUSCH & LOMB MINI LITE MAGNIFIER ILLUMINATES LOW LIGHT SUBJECTS

Mini-Lite combines a handy 3.5X magnifier with a light source for viewing low light objects. 1½″ X 1¼″ viewing area. Simply push button to light magnification area. Overall length: 4¾″ X 1½″. Black plastic case. Optical quality lens. Includes two "AAA" batteries and spare bulb. American made. For reading fine print, examining electronic parts, miniatures, labels, lab items, more.

Mini Lite Magnifier
C35,024 **$8.95**

EVERYTHING COMES UP SHARPER WITH THIS LITE UP MAGNIFIER

Illuminating 5X magnifier with 10X bifocal. Powered by two penlight batteries (not included). Handy source of illuminated magnification for late night mapreaders, botanists, geologists in the field, etc. Plastic magnifier with optical quality 2″ x 4″lens. Magnifier weighs 8 ounces. Switchable for right or left hand.

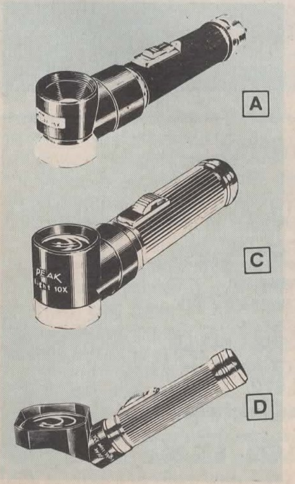
Illuminating Magnifier
C33,396 **$32.50**

YOUR COMPLETE INDEX IS ON PAGE 111

THIS MAGNIFIER HAS A FLASHLIGHT ILLUMINATOR

Two plano-convex lenses for wide, flat field. Engraved inch and millimeter scales. Takes two "D" cell batteries (not included). Useful for retouching photographs or inspecting printing. Examine textiles, auto parts, signatures, maps. A simple and convenient microscope substitution.

Magnification: 5X
Lens Diameter: 1¾″/47mm
Illuminating Magnifier
C50,154 **$21.95**



HAND HELD MAGNIFIERS

PEAK, Illuminated, Magnifiers and Comparators for Industrial, Research and Natural Studies. High Impact Syrol Construction; Black with Case (Batteries Not Included). Excellent Optical Quality, Distortion Free Image.

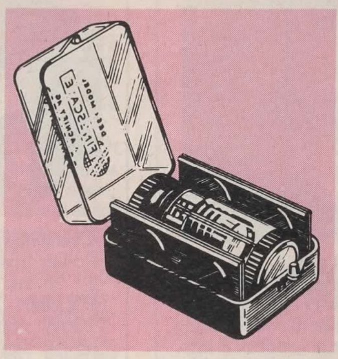
A Most Powerful 15X Magnifier with Detachable Head. Effective Diameter 19mm Dimensions: 36 x 42 x 180mm **C49,427 $39.50**

C Powerful 10X Magnifier or Comparator with Detachable Head. Standard Metric Scale 35mm, Suitable for Measuring Fine Work and for Inspection. Dimensions: 35 x 44 x 137mm

10X Comparator	**C49,255**	**$99.50**
10X Magnifier	**C49,471**	**$29.50**

D 3.5X Magnifier, Large Lens 53 x 53mm, Detachable Magnifier Head, Suitable for Map and Graphic work. Dimensions:60 x 75 x 190mm
C49,253 $34.50

Specialty Magnifiers

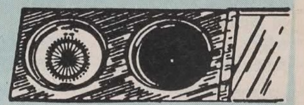


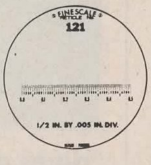
MAGNIFYING COMPARATORS AND RETICLES

A precision 6 power magnifier. Accurate, easy to use, versatile and truly portable. Often replaces far more expensive measuring microscopes and projection comparators. In use, the appropriate reticle is inserted and the comparator is placed directly on the work. Note that all the reticles are supplied in black line and white line pairs so that optimum contrast may always be achieved. Supplied with reticle **C49,643 and case**

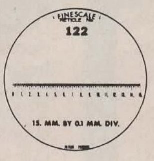
C49,642 comparator $68.50

ADDITIONAL RETICLES SUPPLIED IN PAIRS, ONE BLACK-LINE AND ONE WHITE-LINE OF SAME PATTERN, IN PLASTIC CASE. PLEASE ASK FOR COMPLETE LIST CONTAINING 70 MORE RETICLE FORMS.

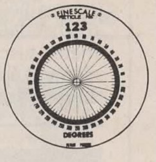




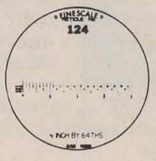
No. 121 - ½ In. By .005 In. Div.
This is the most popular scale for mechanics, toolmakers, and engineers working with decimal measurements.
49,643
$18.50



No. 122 - ½ In. By .0.1 Div.
This is the most useful scale for scientists, laboratory technicians, and others using the metric system.
49,644
$18.50



No. 123 - Degrees
A full circle protection with 1.° **divisions. A generally useful scale.**
49,645
$18.50

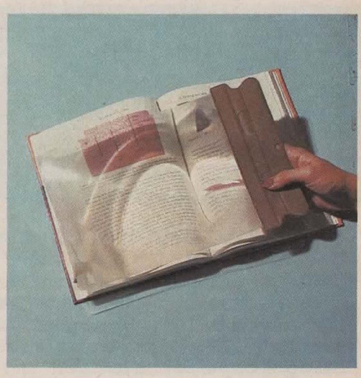


No. 124 - ½ In. By 64ths. Open scale and fine lines permit very accurate measurements for those preferring fractional dimensions.
49,646
$18.50

MAGNIFIER ENLARGES A FULL PAGE OF TYPE

Don't strain to read fine print. This unbreakable pliable magnifier enlarges print to bold, clear type. 8½″ X 11″ size magnifier enlarges a full page of most magazines and documents. Vinyl gripping handle on side.

Focal Length: 8″
Thickness: 1mm
Full Page Magnifier
C31,919 **$6.50**

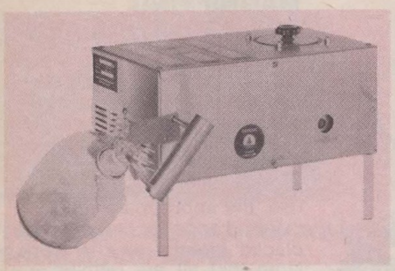


3X ALL-PURPOSE DESK-TOP MAGNIFIER

Handy and convenient tool for any magnification need. Lens is mounted on a 3½″ square acrylic base. Clear base permits light to illuminate object being magnified. Double glass optical quality lens.

Lens Diameter: 2½″
Magnification: 3X
Working Distance: 1½″
All-Purpose Magnifier
E34,989 **$19.50**

ORDER BY PHONE
416-787-4581
OR BY TELEX:
06-969864



Water Distillers For Homes/Labs
High capacity, stainless steel distiller. Provides pure water for drinking and cooking free of bacteria, virus, chlorides, sodium etc. A new flavour to your cooking and drinks. Easy to handle. Manual capacity 6 Imp. gallons per day. Size: 13"x 19" x 11", 1000 watts. Automatic 6 Imp. gallons/day with holding capacity of 5 imp. gallons. Size 18" x 20" x 13" 1000 W automatic controls. Approved by Ontario Ministry of Health and C.S.A.
Manual C49,175 $468.50
Automatic C49.176 $798.50

HEIGHT: 18¼". WIDTH: 10½"
250 Watt Calrod Element. 120 Volt. Distills 2 Gallons (24 hours).

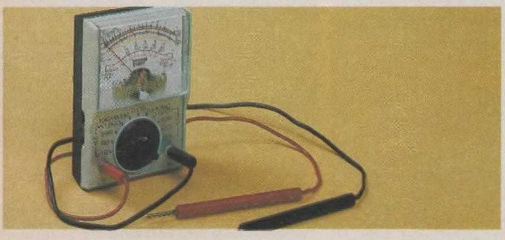
HAVE A BOTTOMLESS WELL OF PURE DISTILLED WATER

Dependable distiller produces a gallon of spring fresh water in only hours at a cost of about 18 cents. A convenient source of pure water for lab use. Rugged unit weighs 13 pounds. 250W 18½" x 9½" size. Removes elements from water which could affect experiments.
Water Distiller
C49,317 $289.50

STROBE TACH

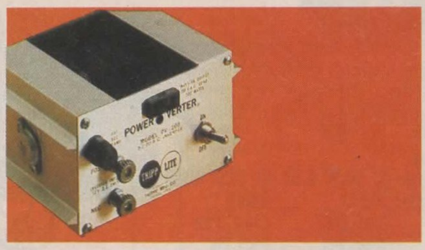
TWO IN ONE STROBOSCOPE AND TACHOMETER

Stroboscope stops/slows apparent motion of moving objects; tachometer measures revolutions per minute. Flash tube, tripod socket, calibrated 50/60 Hz. Weighs 27 ounces. 3" x 3" x 7".
Stroboscope/Tachometer
C71,500 $284.50



11 RANGE MULTIMETER

Palm-size convenience & easy-to-read scale. Budget-priced. VAC/DC 0-10, 50, 250, 1000 (2K ohm/V) db;-10 to 22; DC current: 1-1000mA; ohm meter: 0-10K ohm, 0-1 ohm. Accuracy range: AC ± 4%, DC ± 3%. Plastic housing.
Multimeter C71,739 $39.50



CHANGE DC CURRENT TO AC

Power inverters change 12V DC current to 117V AC power. Transistorized. 60Hz. **PV100:** 100W max. continuous output; 100W max. intermittent output; 2.5 input amps; 3½" × 6½" × 5½", 5lbs. Cigarette lighter plug. **C31,810 $163.50**
PV200: 200W max. continuous output; 220W max. intermittent output; 3.5 input amps; 3½" × 6½" × 5½"; 6 lbs.
C35,776 $206.50

THREE RANGE LIGHT METER

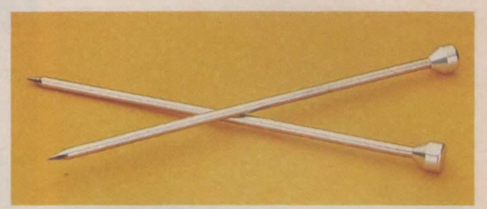
Meter automatically corrects for color quality & incident light angle. Three switch-selected ranges give accurate readings from 10 to 1000 footcandles. Linear scale ranges. Taut band meter suspension. Wt.: 4 ozs. With sensing element shield & case. 1½" x 2½" x 3¼".
Light Meter C49,027 $148.50

0.02 PSI SENSITIVE AIR PRESSURE SWITCH

Gold inlay switch contacts are single pole normally open and rated at 10 MA @ 30 VDC. Ports accept ⅛" inside diameter tubing. 1" square body. 5/16" thick. Polycarbonate case. 10 million cycle life. Weighs 20 grams.
Air Pressure Switch E41,623 $28.50
E41,623A 2 for $54.50

DIGITAL pH METER

Hand-held battery-powered meter delivers precise readings with 0.1 resolution over full 0-14 pH range. Characteristic reproducibility of 0.05 pH. Red 5/16" LED display. Measures 3½" x 5" x 2". Weighs 11 ounces. Digital meter probe. 4.01 and 6.86 buffers, case.
Digital pH Meter E61,300 $496.50
Replacement Electrode
E42,026 $125.50



HEAT PIPE SPIKE

Capillary action recycles fluid sealed in copper tube which vaporizes and condenses over and over. 14⅝" long. Stainless steel body houses the copper lines. The head is solid aluminum. Designed to operate between 300 and 450 degrees Fahrenheit.

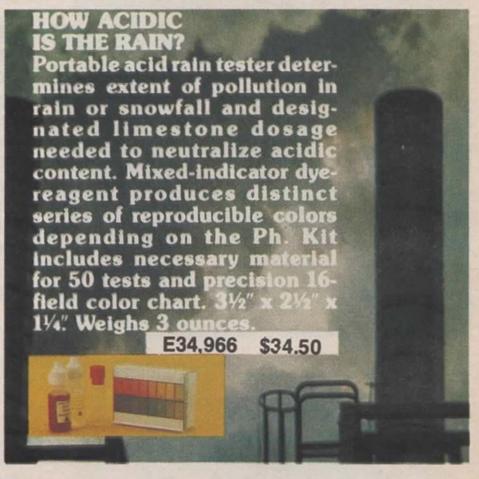
Heat Pipe	**C35,255**	**$12.50**
Package of 10	**C35,256**	**$99.50**

ALCOHOL LAMP

Heat small materials or shape glass tubing. Cap prevents evaporation; used to extinguish flame. Glass lamp. Clear body. 2 oz. with three 7" braided wicks. Works best with wood alcohol fuel.
C35,222 $9.95
3 Extra 7" wicks.
C35,223 $1.50

DIGITAL MULTIMETER

LCD display, overrange indicator, dial function and range selectors, input jacks. 7.1" x 3.1" x 1.5". Requires one 9V battery (incl.). Low battery indicator. Overload protected.
E31,175 $289.50



HOW ACIDIC IS THE RAIN?

Portable acid rain tester determines extent of pollution in rain or snowfall and designated limestone dosage needed to neutralize acidic content. Mixed-indicator dye-reagent produces distinct series of reproducible colors depending on the Ph. Kit includes necessary material for 50 tests and precision 16-field color chart. 3½" x 2½" x 1¼." Weighs 3 ounces.
E34,966 $34.50

Lenk
Butane Fuel
CAUTION

SPARKSHOOTER

Press button, generate 8-10 20,000V sparks. 10" ×2½"×2¼". Weighs 11 ozs. Not shown.
E31,261 $29.50
Portable Bunsen Burner. Burns over 7 hrs. on 1 fuel container.
E71,556 $47.50
Fuel Refill (7 hrs.)
E41,672 $12.50
Flame Spreader (wing top)
E41,673 $12.25

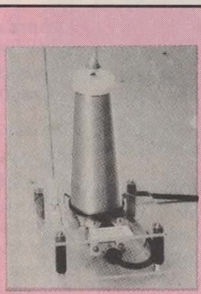
Laboratory Equipment

JACOB'S LADDER GENERATOR

Climbing arc generator is designed for operation at approximately 10,000V A.C. Unit consists of two diverging conductors within a lucite tube. The arc starts at the bottom and climbs, follows the heated ionized air, blows out the top, and restarts at the bottom. Illustrates the action of the Horn Gap, seen on power transmission lines and transformer yards for dissipating the arc of disconnects. 15" high unit has tube connection. Use a solid stopper and operate the generator, it fills with the red brown oxide of nitrogen. This may be aspirated through water to form nitrous acid, illustrating the fixation of nitrogen by lightning. Gap can be adjusted. A gap of about 1/4" is correct for 10,000V and can be obtained by rotating the horns. Works well with standard luminous tube (neon sign) transformer or Tesla coils.

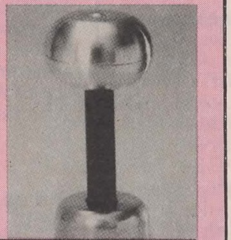
Climbing Arc Generator E35,334 $219.50

Luminous Tube Transformer. 12,000V, 30 milliamps. C35,335 $199.50



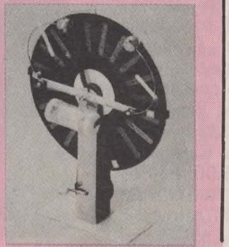
The Tesla Coil radiates high frequency energy through space. Generates up to 50,000 volts. Great classroom demonstrator-includes 21 experiments. Coil capacitors, air core transformer, ball electrode, insulative base, plastic cover, cord, small neon lamp, discharge electrode, 2 antenna plates and directions. Socket for standard bulbs. 14" x 6" x 6".

Tesla Coil D70,301 $248.50



High Quality 200,000 Volt Van de Graaf Generator Demonstrates Lightning & Hair Raising Effects. 17 inches tall and comes equipped with a 6 inch aluminum top ball. Powered by a 5,000 rpm, 110VAC motor, has a humidity range of 0-99% & generates a current of 1.5 to 2.5 microamps. Aluminum base. Assembled.

Van de Graaf Generator	D70,264	$243.50
Extra Band	D42,012	$6.50



Low Cost, Easy-To-Use Electrostatic Generator. Ideal for use in many chemistry, electricity & physics experiments. Turn the crank & two 9 inch plastic discs rotate in opposite directions. Metal collector brushes store static electricity in condenser until discharged. Set includes discharger, 2 luminous plates, bell, dancing balls, lightning rod and more. 14 in. high.

Electrostatic Generator E70,070 $142.50

MICROWAVE OVEN LEAK DETECTOR

Microwave Oven Radiation Meter - An economical device that quickly and accurately detects excessive microwave radiation levels. Rugged and accurate meter mechanism, needs no batteries. 4-5/8" long, weighs 1/2 oz.

Radiation Meter C49,219 $21.95

Weather Computer Makes You Meteorological Prophet. Predict wind speed, direction, temperature, cloud conditions and precipitation. 28 pgs. Tables and scales.

Weather Computer E61,061 $29.50

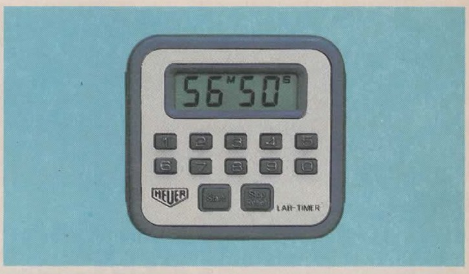
THE MOST VERSATILE SCREEN VIEWER SLIDE PROJECTOR

Here's a revolutionary new way to show slides at home or at a business meeting with more fun, less fuss, and more effective presentation. Screen View Slide Projector are a new concept in family home entertainment, screening every detail your camera captures on film. Is easy to use, costs a lot less than other systems and its so versatile. Its own built-in screen, 6¼" x 6¼" is big enough to allow a group of people to watch the show, even in broad daylight, and it can be converted to slide projector by removing the built in screen, for large screen projection. The optically enhanced, colour corrected wide angle screen means every picture is clear and crisp every time. It provides an easy and quick answer to keeping your slides in order; a 50 slide tray. Also allows fast sorting of slides within the magazine without handling a single slide.

For business meeting, conferences and exhibitions, really proves to be a great winner. Its versatility and ease of use makes it ideal for client presentations. It has additional power to explore the full colour potential of any slides with its light output on the built in colour corrected screen. Combining the 12V 50W halogen lamp with the computer designed aspheric condensor lens system and the 50 mm projection lens gives the full projection capacity.

Slide Viewer Projector	C49,616 $174.80
Extra Slide Trays (Pkg. of 2 - For 100 slides)	C49,620 $7.50
2.8/63 mm Accessory Projection Lens	C49,618 $44.50
Water Resistant Bag with handle and shoulder strap	C49,619 $38.50
Stack Loader (40 slide capacity)	C49,619 $19.50 each

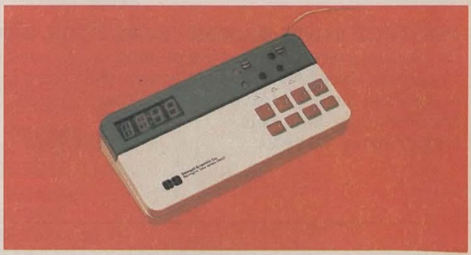
Timers



HEUER COUNTDOWN DIGITAL TIMER

Four digit display timer can be programmed up to 99 minutes and 99 seconds. Large liquid crystal display. Pocket size convenience for timing field tests, lab experiments and more. Includes clip and magnetic attachments. Timer also can stand on table surface. 2¼" x 2½". Includes long life battery. Blue.

Heuer Digital Timer E33,596 $62.50



FOUR CHANNEL COUNTDOWN TIMER AND CLOCK

Allows you to keep tabs on three experiments and the time all at once. Quartz accuracy. Each channel has a tone and a light alarm. Timers can be set in hours/minutes (20 hours to one minute) or in minutes/seconds (20 minutes to one second). Large LED digits are powered by line current. 120VAC, 60 Hz. Beige with red display and trim. 2" x 7" x 3½". E34,296 $169.50

02"23
WEST BEND

DIGITAL LAB TIMER

Times from 100 minutes down to 1 second. LCD display. Loud electronic tone. Powered by single 1.5V button battery (included). Custom-designed micro-processing chip extends battery life. Timer has handy clip, magnet stand and hanging hole.

Digital Lab Timer E35,881 $43.95

Cronus
MIN SEC 1/100

Electronic Stopwatches Single event, split time, for industry, work time, sports 0.002% Accuracy. 1/100 seconds. Neck Lanyard, Rugged Casing. 24 Hour, Day, LCD Digital Display. Date and Time, Time and Alarm. C49,361 $49.50

Extra Large Display. Date, Time Functions, Low Battery Indicator. C49,362 $74.95

SAFETY GOGGLES

Protect against flying particles, chemical splash and dust. Optical quality Lexan polycarbonate lenses. Soft vinyl frame with four plastic ventilators for indirect ventilation. Lenses can be removed for cleaning or replacement. Distortion-free. Clear lenses and frame. With rubber headband.

Safety Goggles **E35,166** **$11.50**

PROTECT YOUR HANDS FROM YOUR WORK

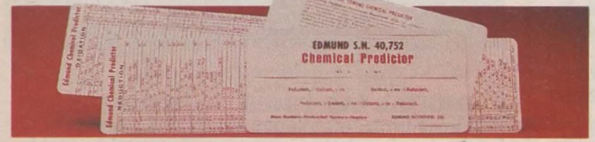
Butyl rubber gloves are just the protection you need in the lab or workshop. Excellent hands protection while painting, plastering or washing the car. Heavy-duty. 14″ long. Unlined. One size fits all. Black only. One pair.

Laboratory Gloves **E34,749** **$11.50**

CLEAR PLASTIC GLOVES

Polyethylene gloves resist oils, chemicals, detergents and more. Provide affordable protection for those handling irritating products. Durable, flexible, easy to use and long-lasting. In two convenient sizes. Useful in the office, lab or around the house. Package of 100.

Medium	**C60,317**	**$7.95**
Large	**C60,321**	**$7.95**



CALCULATE OVER 30,000 CHEMICAL REACTIONS

Plastic coated chemical predictor has two charts of equations so any combination can be matched to provide the answer to a chemical reaction. Numerical data shows if a reaction can occur, its extent and its products. 5½″ x 11″. **E40,752** **$12.50**

LAB APRONS THAT YOU USE AND TOSS AWAY

Disposable polyethylene lab aprons are priced so you use them once or twice and then throw them away. Saves money and effort in time consuming cleaning. Aprons are made from 03mm gauge flame resistant white polyethylene. Measure a full 32″ x 55″. Each one-piece, die cut apron has a loop neck and broad polyethylene string ties. Useful for hobbyists, gardeners, workshop tinkerers. Package of 50.

Disposable Aprons
E31,946 A **$29.50**

REFRACTOMETERS

Measure the concentration of aqueous solution. Cushioned rubber eyepiece. ±0.1% margin of error. Sure rubber grip sleeve guards against user's body heat affecting test results.

GENERAL USE

A) For sugar content checks of fruit, juices, soft drinks. 0-30%, Brix 0.2% min. scale. **C34,705 $299.50. B) Mid-range concentration;** fruit juices and canned goods with sugar solutions. 0-50%, Brix 0.2% Accuracy .25% **C34,706 $343.50. C) High sugar content,** withstands high temperatures (60-100°F), 44-77%, Brix 0.25 - .25%. **C34,707 $343.50. D) Industrial fluid tester** 0-30° .5 divisions, refractive index 1.3330 to 1.3860, 60-100°F compensation. **C49,654 $276.50. E) Synthetic and Semisynthetic,** low concentration fluids .25 divisions, Brix 0-10°. refractive index 1.3330-1.3479 temp. Compensation Range 60-100°F. **C49,655 $365.00. F) For high molecular weights.** Determine oil type. W/refractive hand scale. 1.435-1.520 (nD) range. 0.001% min. scale. **E34,709 $357.50. G) Serum Protein.** 0-12g/100ml serum protein scale. 0.2g/100ml accuracy. nD1.333-1.360 index scale. **E34,710 $357.50**

SALINITY TESTERS

A) Mesure concentration of natural and artificial sea-water. 0.10% salt concentration range. 0.1% min. scale. **E34,711 $379.50. B) Control sea-water concentration** when preparing pickles, for seawater checks, cooking etc. 0-28% salt concentration range. 0.2% min. scale **E34,712 $379.50.**

Battery Coolant

Determines freezing point temperatures of coolant fluid. Separate scale for ethylene glycol and propylene glycol. Teflon coated to prevent corrosion. O to 50 Propylene Glycol and Ethylene scales. 1.15 to 1.3 battery fluid scale.
E34,713 $379.50

INSTANT DRY ICE. REDI ICE MAKES ANY QUANTITY OF DRY ICE FOR SHOP OR LAB

Redi Ice is a mechanical attachment designed to fit any size standard carbon dioxide cylinder. Consists of nozzle, cone and collection bag. Provides any quantity of dry ice, instantly, at a budget cost. Fiber washer provides safe, leak-proof connection to CO_2 bottle. For hospitals, labs, science classrooms. Dry ice may be hard packed while in the collection bag or left in its incurring flaked condition.

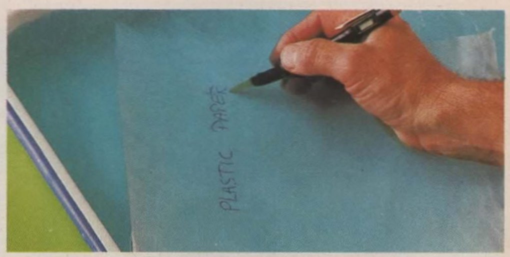
Dry Ice Maker
E71,533 **$136.50**
Extra Collecting Bag
E41,626 **$14.50**

Extreme care is given to each order we receive. It will be checked and re-checked to insure its safe arrival.

PIEZO ELECTRIC TORCH

Micro torch starts instantly at the push of a button. Refillable butane gas chamber provides hours of burn time. Two adjustment valves. 1300C or 2500F temperature. Cushioned rubber grip. Includes firm removable base-stand. All-brass construction. Chrome plated finish. 5½″ high. **E34,972** **$122.50**

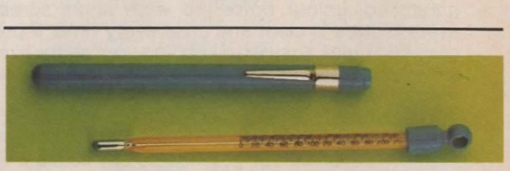
5.3 oz. Butane refill
E34,973 **$7.50**



NEARLY INDESTRUCTIBLE PLASTIC PAPER

Spun-bonded polyethylene paper is resistant to moisture, chemicals and tearing. Won't rip, stretch or shrink, yet is easy to cut, fold or punch. Use a Number 2 pencil to write on paper anywhere, even under water. Chemical spills are easily wiped off. Coated paper also accepts typing, ballpoint pen, grease pencil or felt-tip pen. Can be printed on by offset or letterpress. Standard 8½″ x 11″ sheets.

25 sheets per package **E35,294A** **$19.50**



POCKET LAB THERMOMETERS

Calibrated for total immersion. 5½″ long. Protective case with clip. For general lab work. **$17.50 each.**

Fahrenheit 0° to 220° (2° divisions)	**C60,991**
Celsius −15° to +105° (1° divisions)	**C60,992**

PETRI DISHES

A) Reusable Glass Dishes

Transparent, shatterproof. Can be hot-air sterilized at 160 degrees C. 100m diameter. 15mm high. Can be stacked.

Package of 10.	C35,296A	$26.95

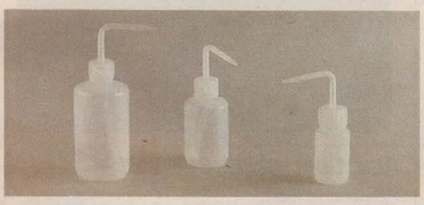
B) General Lab Use Dishes.
50mm diameter. For school science experiments.

Package of 20.	C35,207A	$5.95

HANDY PLASTIC CUPS FOR MIXING AND MEASURING

Disposable, budget-priced cups have numerous uses in any laboratory, school, industry or home. Cups are marked in both English and metric. Non-spill lip.

1 oz. cups (Pkg. of 50)	E60,365A	$6.50
6 oz. cups (Pkg. of 50)	E70,625A	$17.50



LAB WASH BOTTLES

Low density polyethylene bottle and fill tube; polypropylene screw closures and stems. Tip dispenses uniform stream; can be cut back to increase flow. One piece closure and stem for leakproof service. **Packages of 2.**

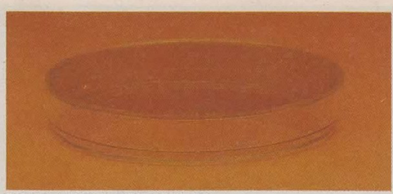
2 oz. bottles (60ml)	E35,201A	$10.95
4 oz. bottles (125ml)	E35,202A	$12.95
8 oz. bottles (250ml)	E35,203 A	$14.95

PURE GUM RUBBER TUBING

Flexible pure gum rubber tubing provides easy connection between laboratory ware equipment. Tubing will not affect experiment outcome. Pliable and durable. **5 foot spools.**

3/16" ID Tubing	C35,232A	$8.50
1/4" ID Tubing	C35,233A	$9.50

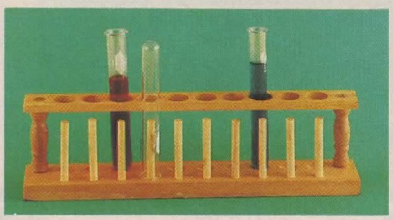
MANY OTHER SIZES AND NYLON TUBING AVAILABLE



NUTRIENT PAD KITS

For membrane filtration and microorganism culturing. **Pkg. of 5 $19.50**

A) Standard. Nutrient media for total microbial counts. **E35,292A** **B) Endo.** E coli and Coliforms form colonies with green sheen. **E35,291A** **C) mFC.** Coliforms and Fecal Coliforms form blue colonies. Microorganisms with alkaline reactions from lactose form red colonies. **E35,293A**



HARDWOOD TEST TUBE RACKS

Useful for conducting multiple experiments or maintaining your test tube inventory. Secure hardwood racks. Two sizes.

Six tube capacity rack	C35,230	$6.95
Ten tube capacity rack	C35,231	$19.50

PLASTIC BOTTLES HAVE A VARIETY OF LAB USES

Store and dispense solutions, chemicals and dry powders with these handy bottles. Clear polyethylene bottles have Yorker dispensing caps. Designed to withstand temperatures up to 140°F. Three sizes.

Packages of 6 .

1 ounce bottles	C34,569A	$ 7.95
2 ounce bottles	C35,326A	$ 8.95
4 ounce bottles	C35,327A	$10.95

UTILITY LAB FUNNELS

Molded of autoclavable polypropylene. 3¼" top diameter. 3¾" overall height. ¼" opening in bottom. 4 ounce capacity. Made in the U.S.A.

Package of 4.
E35,295A $12.95

PRECISION PUMP SOLVENT DISPENSERS

A press of the top and the fluid pumps up. Dispenses only what you want, when you want. No excess fumes, no spilling, no dripping. Air-tight check valves stop evaporation. Stainless steel pump unit. Linear polyethylene bottle. With label set. American made. **$24.50 each**

4 ounce bottle	**F35,249**
6 ounce bottle	**F35,250**
8 ounce bottle	**F35,251**

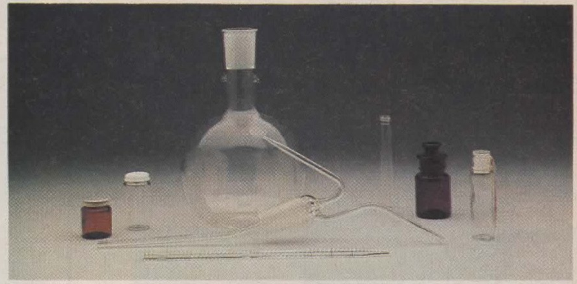
PLASTIC LAB BOTTLES WITH VIEW STRIP

Clear view strip on side of these plastic bottles allows you to see the remaining quantity. With caps. Perfect for mixing chemicals, storing concentrates, photo developing supplies, etc.

12 ounce bottles
(Package of two)
E35,252A $4.50

16 ounce bottles
(Package of two)
E35,253A $5.75

1 liter bottles
(Package of two)
E35,254A $8.50



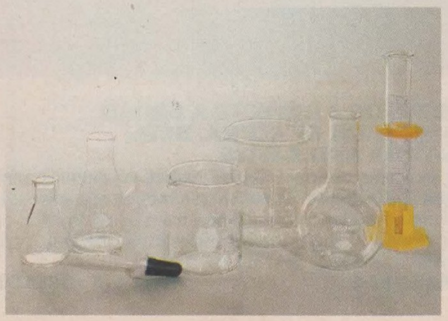
LAB GLASSWARE, BARGAIN PRICED

Inventory closeouts. Case lots. Save $$$

A) 12 Clear Glass Vials. 3" long, ¾" dia. Ground glass stopper. **E34,524A $6.50. B) 36 6ml Pipettes.** Graduated: 0.15 ml; 20C. **E34,538A $24.50. C) 36 Medicine Bottles.** Amber glass. Plastic cap. 1½" tall. 1" dia. **E34,525A $13.50. D) 50 Medicine Bottles.** Clear glass. Plastic cap. 2¾" tall, 1" dia. **E34,540A $14.50. E) 150 Culture Tubes.** 13.5 x 100 mm. Screw thread. No caps. **E34,539A $12.50**

1,000 ml Pyrex Wash Bottle. Ground glass stopper **E34,541 $39.50**

Collector's Antique Medicine Bottle. Amber glass. Ground glass stopper. 2½" tall, 1¾" dia. **E34,535A $11.50**



40 PIECE CHEMISTRY GLASSWARE SET

Top-quality set of heat-resistant Kimax glass. Easy to read calibrations. Easy pour spouts. Durable lips. Set includes:

—Ten 13X100mm test tubes
—Ten 18X150mm test tubes
—400ml beaker
—60ml poly dropper
—Boiling flask
—Ten 16X150mm test tubes
—50ml graduated cylinder
—250ml beaker
—Two 1ml graduated pipets
—125ml Erlenmeyer flask
—Stirring rods

Economical set is perfect for school lab, home or industrial work and experiments.

Chemistry Glassware Set	C49,632	$39.50

TEST TUBES ALL SIZES WHOLESALE PRICES ON REQUEST

Ultrasonic Cleaners

DELUXE 1 GALLON CAPACITY 100 WATT

Cleaning action is generated by sending high frequency sound waves through solutions, causing cavitation which scrubs away dirt and grease.

- Inside dimensions: 9" x 5" x 6" tank
- Overall size 10½" x 6½" x 11"

Standard model. **C49,647 $574.50**

Deluxe model with heater, timer. **C49,648 $689.50**

THREE-QUARTER GALLON ULTRASONIC CLEANER

- 100 watt output
- Tank measures 9" x 5" x 4"
- Overall size 10½" x 6½" x 8"
- Pilot light **C49,649 $432.50**

Deluxe model with heater, timer. **C49,650 $562.50**

PINT CAPACITY ULTRASONIC CLEANER

Excellent for cleaning delicate items. from diamonds to dentures. 6" x 4" x 4" metal cabinet with item platform. 115V, 60Hz, transistorized.

Ultrasonic Cleaner E71,003 $314.50

REMOVE SOLUBLE FILM AND SOILS FROM LENSES ULTRASONICALLY

This transistorized Ultrasonic Cleaner has solid state circuitry for reliability. Reduces cleaning costs to a fraction of a cent per operation. Vinyl painted steel shell and stainless steel tank (4¾" x 3½" x 2½"). 18 oz. capacity. Comes with lid, optical cleaning solution, basket & positioning kit that holds two glass beakers.

Ultrasonic Cleaner E33,625 $399.50

Optical Cleaning Solution (1 gal.) E33,696 $39.50

Liquid Crystals

TEMPERATURE SENSITIVE LIQUID CRYSTALS IN SHEET FORM

These 12" x 12" liquid crystal sheets exhibit a total color spectrum when exposed to hot or cold temperatures. Provides a visual method for non-destructive testing and evaluation. Easy to use. Provides fast response time. Excellent for low resolution thermal mapping. Make ideal and inexpensive science projects. Select by temperature range.

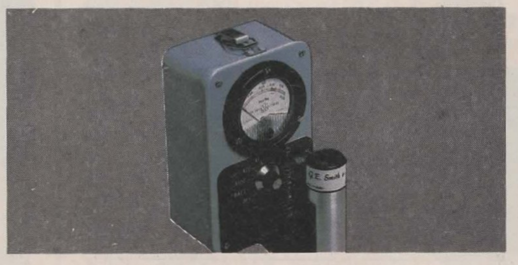
E72,375	(68–77°F)	**$32.95**
E72,374	(77–86°F)	**32.95**
E72,373	(86–95°F)	**32.95**
E72,372	(95–96.8°F)	**32.95**
E72,371	(95–104°F)	**32.95**
E72,370	(104–113°F)	**32.95**

LIQUID CRYSTAL SHEET ASSORTMENT

Assortment includes six 6" x 12" liquid crystal sheets, one in each of the temperature ranges listed above. Handy for research laboratories and industry. Each allows for a broad range of testing applications. Only minimal experimentation is required to conduct tests and be able to interpret the results.

Liquid Crystal Sheet Assortment E61,161 $79.50

Geiger Counters



PROFESSIONAL GEIGER COUNTER

Ideally suited for laboratory use, this lightweight (3.5 lb.) unit detects Alpha, Beta & Gamma radiation. Regulated high and low voltage for stable readings. Ranges: 0-20, 0-2 & 0-2 mR/hr. Three position range selector switch and battery test. 4 "D" batteries included. 4" x 8¼" x 6½".

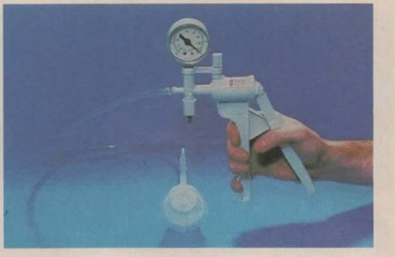
Geiger Counter D17,006 $1139.50

MONITOR 4 DETECTS A BROAD SPECTRUM OF ALPHA, BETA, GAMMA AND X-RAYS

It indicates radioactivity by means of meter, count light and beeper. Three meter ranges are selected, allowing detection of radiation from 0 to 50mR/hr. or up to 5000 times natural levels. 9V battery (not included). 5¾" x 3⅛" x 1 7/16".

Monitor 4 E31,475 $495.50

Vacuum Equipment

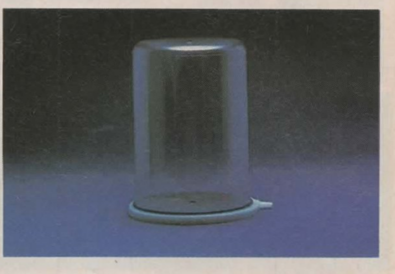


HAND HELD VACUUM PUMP

2 ft. of ¼" tubing; 1⅝" diameter gauge; 5" lifter, 2½" diameter cup. Size 7" x 4".

Vacuum Pump C71,301 $75.50

Pump (without gauge and lifter) E71,300 $65.50



VACUUM JAR

Clear bell jar with gasketed, polyethylene base and permanent, fused-in ¼" tubing connection. Jar: 9" x 6⅜" I.D. Base: ½" x 7½" dia. Neoprene gasket: 3/21" x 7" dia.; ½" center hole.

Vacuum Jar E71,338 $148.50

VACUUM PRESSURE PUMP

Continuous operation to 20"hq. or 17psi w/ free aircap. of 900cu. in./min. Motor: 1/45hp at 1550rpm. 115VAC, 60Hz. 7¼" x 4" x 5½".

Vacuum Pressure Pump C31,057 $334.50

SURPLUS SPECIAL VACUUM PUMP

American-made new pump was priced by GE to sell for $100. Available for only $59.95. 1/20 HP; 1600/1300 RPM; 115V. Air compression ratings: 1.1CFM @ "0" PSIG, 0.85 CFM @ 5PSIG, 0.65CFM @ 10PSIG, 0.45CFM @ 15PSIG. Maximum pressure continuous 10PSIG and 15PSIG intermittent. Vacuum pump ratings: 1.1CFM @ 0"HG, 0.80CFM @ 0.5"HG, 0.60CFM @ 10"HG, 0.35CFM @ 15"HG, 0.10CFM @ 20"HG. Maximum continuous vacuum 20"HG; maximum intermittent 22"HG. 8¾" O/A length X 3⅜" X 4 9/16". ⅛" NPT female inlet/outlet filters. Wt.: 8 lbs.

E34,751 $144.50

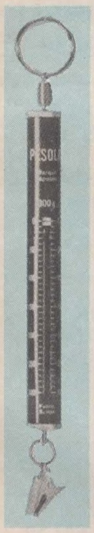
FORTEC
CR-105
12-34-56

AN AMAZING DIGITAL PRECISION SCALE WHICH IS A CALCULATOR AND YET A 12 HOUR ALARM AND CLOCK, ALL-IN-ONE. Measuring weight up to 1 kg with 1 gm resolution. Conversion between gram and ounce, automatic zero, four function calculator with 8 digit display. When idle shows hours, minutes, seconds. Large LCD display, 7½ x 6¼ x 1¾ high. Battery operated (not included) excellent quality. Don't miss it.

C49,684 $69.50

VERY SENSITIVE "THE JIM" SPRING SCALES

- Precision: with maximum weight within + 0.3%
- Unlimited Life Expectancy
- Easily recalibratable
- economical
- made in Canada.



No.	Cap.	Div.	Lgth.
C49,683	5g	0.1g	6"
C49,684	10g	0.2g	6"
C49,685	30 g	0.1g	6"
C49,686	50g	0.5g	10"
C49,687	100g	2.0g	6"
C49,688	100g	1.0g	10"
C49,689	300g	10.g	6"
C49,690	300g	2.0g	10"
C49,691	500g	5.0g	10"
C49,692	1000g	20.0g	6"
C49,693	1000g	10.0g	10"

NO.	PRICE
C49,683	21.95
C49,684	22.50
C49,685	23.50
C49,686	26.95
C49,687	24.50
C49,688	27.50
C49,689	25.00
C49,690	28.50
C49,691	29.50
C49,692	26.50
C49,693	29.95

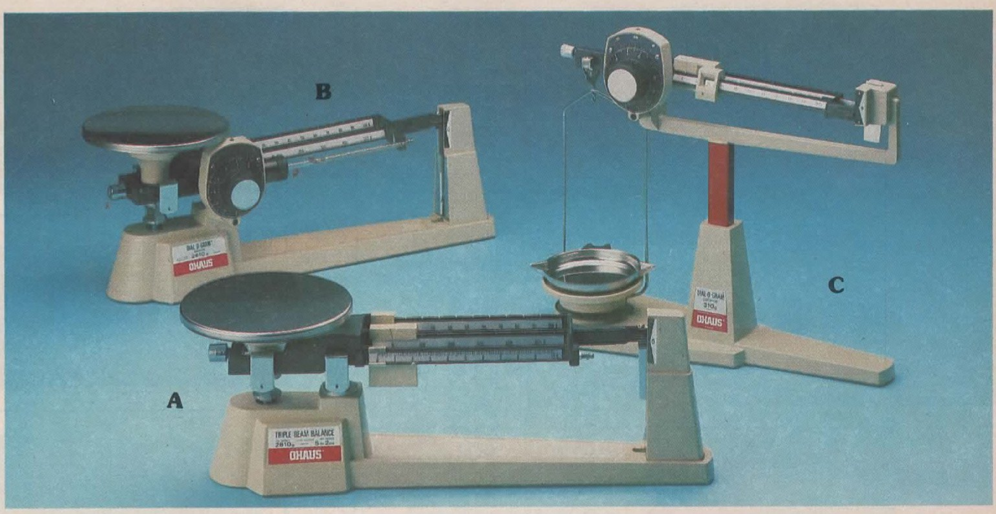
OHAUS PRECISION BALANCE WEIGHTS

Precision brass masses are machined from raw bar stock to exceptionally fine tolerances.

1,000 Gram Capacity Set. Includes one each of the following weights: 1, 5, 20, 50, 200, 500 and 1,000 grams and two each of the following: 2, 10 and 100 grams. Storage box is 6½" x 2¼" x 2-5/8". **G36,116 $10.45**

500 Gram Capacity Set Includes one each of the following weights: 1, 5, 20, 50, 200 and 500 grams and two each of the following: 2, 10 and 100. Storage box is 5½" x 1¾" x 2¼". **G36,115 $69.50**

50 Gram Capacity Set Includes one each of the following weights: 10, 50, 100 and 500 mg and also 1, 5, 20 and 50 grams and two each of the following: 20 and 500mg and also 2 and 10 grams. Housed in an acid-resistant polypropylene case that measures 2-5/8" x 1½" x 1¾". With pair of stainless steel forceps. **G36.026 $25.50**



OHAUS PRECISION SCALES FOR LABS, SCHOOLS AND INDUSTRY

Each is easy to operate and includes precise weight sensitivity. From the company which has been setting the standards for scales for years.

A METRIC TRIPLE BALANCE

Designed for speed and ease of operation. Sensitive sturdy and parallax free, this balance is magnetically damped (two permanent alnico magnets mounted at the end post to provide friction-free damping), and insensitive to out-of-level conditions. Attachment weights, available as an accessory, fit conveniently in the balance base. Beams: 0-500g; 0-100g; 0-10g. Sensitivity; 0.1g. Capacity: 610g. without attachment weights; 2610g. with attachment weights. Ideal for field work. Size: 6″ × 6″ × 18″. Stainless steel platform.

Triple Beam Balance **C71,695 $199.50**

Accessory Weight Set expands capacity to 2610g. Incl. one 500g and two 1000g. wts. **C41,766 $39.50**

B OHAUS DIAL-O-GRAM® 1600 SINGLE PAN BALANCE

Three weights are easily attached to the balance. It has a 2610 gram capacity with a 10 gram dial. Balance comes complete with a patented Ohaus tare poise—internally threaded with a flat spring. 19″ × 7″ × 8″.

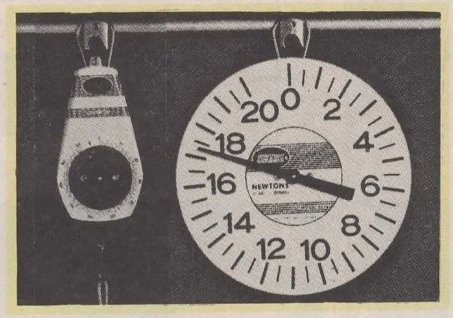
Pan Balance **C72,466 $359.50**

C OHAUS DIAL-O-GRAM® SINGLE PAN METRIC BALANCE

Here is a high quality metric instrument that has a 10 mg sensitivity and is accurate to 0.01 gram. It also comes complete with a precision spring direct reading vernier dial. Balance has a 310 gram capacity and a 10 gram by 0.01 dial/vernier. It measures 14½″ × 6″ × 12″.

Single Balance **E71,970 $368.50**

OTHER SIZES AND MODELS AVAILABLE



DIAL SPRING SCALES 8000

Both types of spring scales have: frosted aluminum faces and etched numbers; pointers securely pinned to supporting shafts to eliminate breakage due to sudden release from tension — also allows easy zero adjustment; rugged construction engineered for long life.

DEMONSTRATION SPRING SCALE

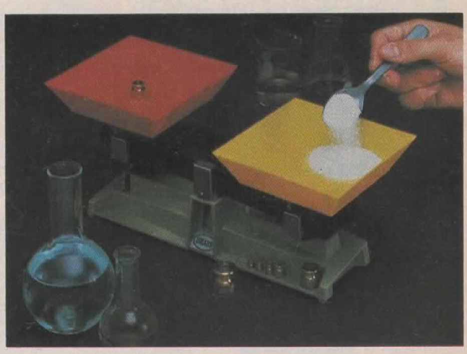
Face measure 8¼" diameter with ¾" black numerals. 20 x ½ hectogram

C49,694 $49.50

DIAL SPRING SCALES

Uniquely designed, can be easily readjusted. 6" x 1¼"

250g x 2g/9 oz x 1/8oz.	**C49,695 $29.50**
500g x 5g/19oz x ¼oz.	**C49,696 $31.50**
2000g x 10g/72oz x ½oz.	**C49,697 $32.50**

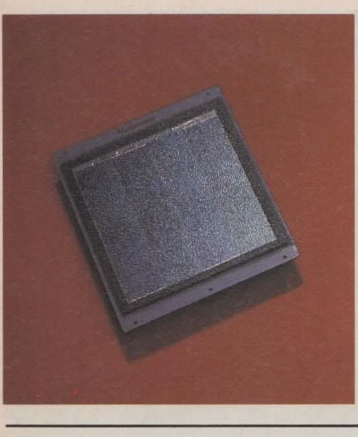


RUGGED, LOW COST DOUBLE PAN SCALE FOR SCHOOLS AND INDUSTRY

Dependable balance has die-cast zinc base, reinforced aluminum beam, steel knife edges, self-aligning steel bearings and two weight sets. Includes Avoirdupois 1/16, ⅛, ¼, 1 and 2 ounce weights plus metric 2, 5, 10, 20 and 50 gram weights. Has 0.5 gram sensitivity. 2000 gram capacity. 10½" x 3" x 4½". A precision tool for lab and classroom use.

Double Pan Scale **C71,168 $109.50**

EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4



MARINE POWER

Marine module was designed especially to remove the embarrassment and danger of the flat battery.

Solarpac modules will give useful charging current even under a grey overcast sky. It is made of dopped crystaline silicon with 30 - 50 years life expectancy.

Solar electricity is a proven energy source and has now become cost effective. A photovolataic charging system is reliable and practically maintenance free.

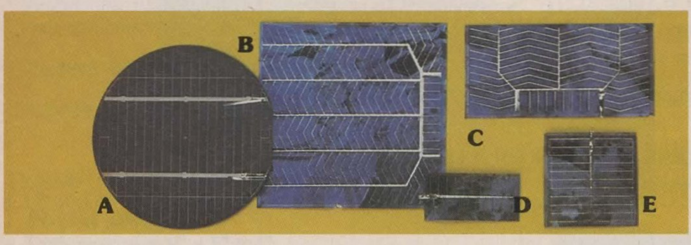
Electrical Characteristic Max. Load 16.9 Volt DC. Current 600MA, Power 6 Watts.

C49,700 $298.50

4½″ X 5¾″ SOLAR PANELS

Designed to be connected in series or parallel. Silicon solar cells are mounted in a plastic case. When exposed to light, each panel provides 4V at 40mA.

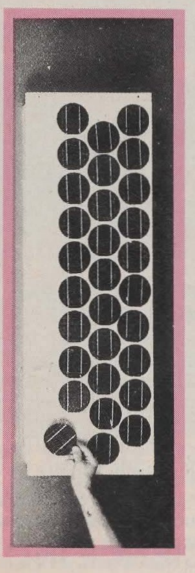
Panel	C49,788	$19.50
	C49,788B	2 for $35.95



SEMI-CRYSTALLINE SOLAR CELLS

Convert sun or incandescent light to electricity with high efficiency. Each cell works from −65° to 125°C and has a clear protective coating. Conservatively rated at 100mW/cm^2 light intensity @ 0.45V, 25°C.

	NUMBER	CELL SIZE	AMPS	VOLTS	PRICE
A	C31,276	**10cm dia.**	**1.8**	**.45**	$18.50
B	C35,727	**9.5 × 9.5cm**	**2.0**	**.45**	$24.50
C	D31,948	2.5 × 5cm	.2	.45	$ 8.50
D	D31,949	5 × 5cm	.5	.45	$11.50
E	D31,950	5 × 10cm	1.0	.45	$15.50
F	E35,726	7.5cm dia.	1.0	.45	$ 7.50



SOLARPAC ENERGY SYSTEMS

Photovoltaics, the science of converting sunlight directly into electricity, is an ideal technology for meeting many of the electrical energy needs. Solarpac power modules are manufactured to withstand a long life in all climates. Modules of this quality have been subjected to accelerated environmental testing by the Jet Propulsion Laboratory to simulate 20 years life under normal operating conditions and have excelled - far surpassing test requirements.

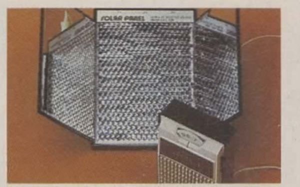
Solarpac is the top of the line photovoltaic modules consisting of a number of high grade single crystal silicon solar cells. The cells are protected by a special low iron tempered glass and laminated between two layers of EVA and backed by a thin layer of impact resistant Tedlar.

Modules can be connected either in series or in parallel to produce higher voltage or higher amber ratings.

Electrical Specifications Load 21.07 Volt DC Current 2.19 Amp. Power 36 Watts.

C49,699 $598.50

YOUR COMPLETE INDEX IS ON PAGE 111



MULTI-VOLT MINI PANEL

Produces 3, 6 or 9 volts at 50mA with jacks for each output. Folding mirrors; 24 solar cells.

M-V Panel	D42,955	$34.50
12V Panel	D31,280	$29.50

GIANT FRESNEL LENS: 3000°F

Measures 31″ × 41″ × 3/16″. 40″ focal length. Use lens to harness the power of the sun, creating a solar torch with industrial temperatures reaching 3000°F. For soldering, brazing and melting a wide range of metals. E31,139 $252.50

SOLAR CELL KIT LETS YOU TINKER WITH SOLAR POWER

Explore the developing science of solar energy through your own experimentation. These crescent solar cells deliver 40mA @0.45V under load. 10 cells.

Solar Cell Kit E31,278 $9.95

CONCAVE MIRROR IS A 16 INCH DIAMETER REFLECTOR!

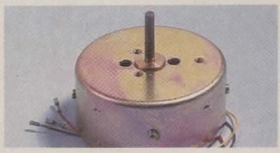
Back is aluminum. 15/16″ deep, 22″ focal length. 6 lbs. E80,097 $85.50

---

18 INCH DIAMETER PARABOLIC REFLECTOR

Constructed of highly polished aluminum. Focal length approx. 4.5″ above the 1⅛″ center hole.

Parabolic Reflector E80,254 $64.50



VARI-SPEED LEAR JET MOTOR IS POWERED BY SOLAR CELLS OR BATTERIES

Four brush DC motor runs 4 to 12V, draws 100 mA. 3″ dia, 1½″ high. Shaft measures 1⅛″L × 3/16″ dia. Powered by solar cells or batteries. E34,065 $20.50

DETECT HEAT LOSS WITH THIS ELECTRONIC ENERGY AUDIT TOOL

Thermo Guard detects tiny air leaks that you can't even feel with your own hand. Pays for itself after the first use. Just point the sensitive tip near areas where heat loss is most likely to occur. Problem areas include doors, windows, vents, electrical outlets, crawl spaces, etc. Unit can even detect insulation breaks behind walls, ceilings and floors. For home or industrial use.

Thermo Guard E61,199 $47.50

LARGE FRESNEL LENS IS IDEAL FOR CONDUCTING SOLAR EXPERIMENTS

Precision crafted lens has an 8½″ f.l.; 50 lines per inch. Lens is 10½″ x 10½″ and is 1.16″ thick. Unmounted lens comes with our 16 page book "Fun with Fresnel Lens" which describes applications, how to build an overhead projector and more. Instructions are included to build the 360 degree stand and frame depicted. Frame allows you to use lens as a solar cooker for heating prepared foods, as a kiln for art work or other solar experiments.

Fresnel Lens E70,533 $36.75

Energy Savers

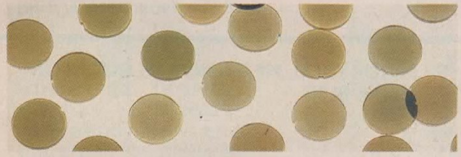
BUTTON BATTERY
solar energizer
No. SBE1
Charge 3 to 6 Hours in Direct Sunlight

RECHARGE BUTTON BATTERIES

Solar charger lets you give new life to drained button batteries in 2 to 6 hours. Simply hang in a window using the included suction cup. Handy 2½" x ⅜" x ⅜" charger pays for itself. Sun's intensity and battery condition determines recharge time. **E34,772 $57.50**

PROXIMITY SENSOR

Proximity sensing using filtered LED and photodetector. 0.12" smallest detectable object; 0.18" op timum distance to target; 1.5" maximum usable distance. ¾" square aluminum block. LED input 100mA maximum at 1.1 to 1.7 VDC. 20VDC photodetector. Twin 0.0125" diameter mounting holes. **E35,129 $35.95**



POLARIZING FILTERS

Laminated glass and polarizing material is 20mm in diameter and 2mm thick. Two filters provide variable density polarizing. Made by Polaroid. Package of two filters.

Polarizing Filters **E34,881 $7.95**
E34,881A 6 for $45.50

WIRE STRIPPER KIT

Stripper cuts through insulation and strips wire in one easy to follow motion. Practical kit for home and office, electronic and electric prototype shops, maintenance and production departments, experimental laboratories and more. "Trig-O-Matic" operation. Complete kit includes stripper and three sets of replaceable blades for 14 to 30 AWG wire, 18 POSJ or parallel wire, and 30D Ohm TV/FM twin-wire down lead cable. Kit is packed in plastic storage box.

Wire Stripper Kit **C35,377 $39.50**

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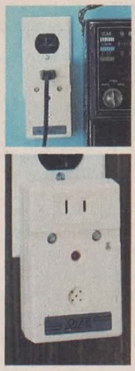
Toronto, Ont. M6A 3A4
(416) 787-4581



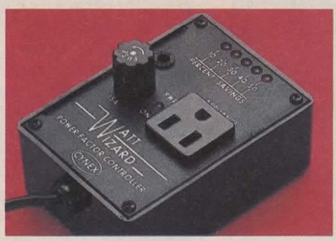
PUT SOUND TO WORK

Sound activated switch has sensitivity level and adjustable timer. 2½" x 3½" x 1¼". Plugs into electrical outlet. Activate lights, radios, etc. Can react to whispers or loud sounds. **C33,721 $29.50**

SENSOR CONTROLS LIGHTS

Screws into light socket. Turns lights on at dusk, off at dawn without timers. UL listed. For ordinary and floodlight bulbs to 150W. 2¾" x 1½".

C49,236 $9.50
C49,236A 2 for $17.50

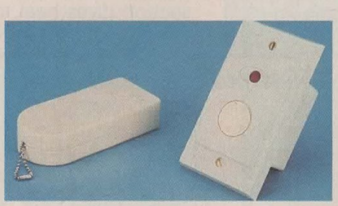


WATT WIZARD LOWERS BILLS

Applies precise voltage necessary to run motor at constant speed. LED readout of energy savings. 4" x 2½" x 1½".

110V Wizard **E33,568 $98.50**

220V Wizard. Requires professional wiring. **E33,569 $126.50**



BRIGHTEN/DARKEN ROOM BY REMOTE CONTROL

Infrared remote control dimmer raises or lowers room brightness. Wall mounted sensor/receiver. Hand-held transmitter with 25 foot range. Sensor/receiver can also be operated manually. Adjust light to your desired tastes. For office or home lighting situations. Saves energy by providing only the light you need. **E33,773 $69.50**

WHISTLE SWITCH

Whistle inside hand-held switch activates lights ahead of you. Eliminates need for night lights at home or office. Control plugs into 110V outlet, has 100 foot range and accepts appliances up to 400W. Works without cords, wires or batteries. Also for turning on/off TVs, stereos, etc. **E33,134 $45.50**

SURFACE THERMOMETER
CHIMGARD
Condor

Don't Throw Energy Out The Window

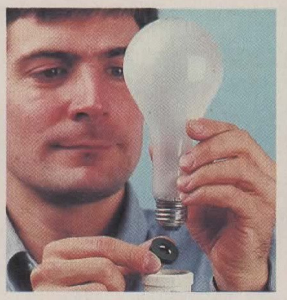
Solameter measures heat gains and losses thru your windows. Stick it on your window and it helps determine when to shut curtains to save energy. Tells temp., heat loss & BTU/sq. ft. 2½ inch diameter.

Meter **C31,933 $14.95**

SURFACE THERMOMETER
CHIMGARD
Condor

Chimguard Magnetic Thermometer

ensures safety from the risk of fire due to creosote build up in chimney. Shows temp. up to 900° & excessive flue gas temps. ½ x 2.5" **C42,904 $18.50**



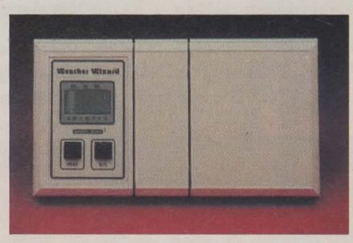
CREATE THE 10-YEAR BULB

Lamp life extenders attach to end of bulb. Convert AC current to DC, providing cooler bulb that generates light up to 100 times longer. Bulbs can last 10-years (87,600 hours). Draw less energy, saving you $$$. Extenders also soften harsh glare of regular bulbs. Package of 6. **E31,890A $29.50**

the SWITCH
the SWITCH

REMOTE CONTROL

Wireless switch activates appliances and lights up to 300 feet away, through walls, windows and doors. Receiver plugs into socket. 4¾" x 2½" x 1¾". Transmitter: 2" x 4¼" x 1". Uses one 9V cell (not included). **E33,637 $112.50**



PROGRAMMABLE WEATHER WIZARD TAMES HEATING AND COOLING COSTS

Programmable thermostat switches automatically from heat to air conditioning and back. Easy-to-program seven day, six setting unit. Cycle minder feature increases furnace or AC efficiency by slowing system's on/off cycle. Monitor calculates when furnace or AC should come on to meet a programmed setting. 5-year manufacturer's warranty. LCD display gives temperature, setting and time. Takes single nine-volt battery (not included). Not designed for use with heat pumps. **C34,797 $164.50**

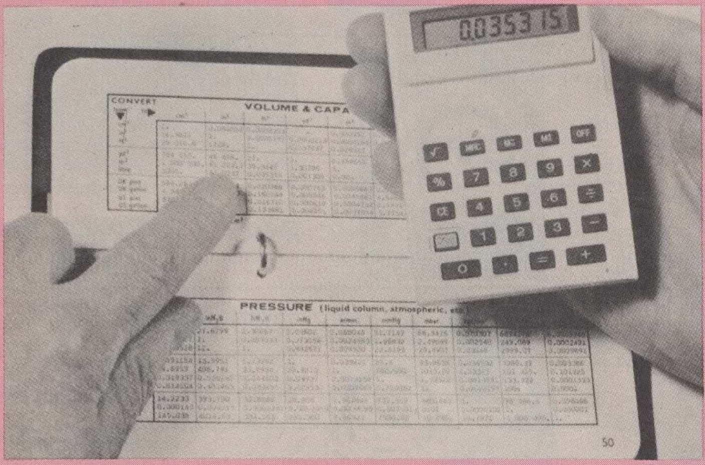
All Seasons Programmable Thermostat Devise your own six setting temperature pattern or use the built in heating or two AC programs. One button programming. Not for use with heat pumps or oil heat units. **C34,557 $96.50**

Advantages of Hunter Calculators

- *Instrument Quality* Design & Construction
- Made of *heavy gauge Perspex Acrylic Plastic* — will last a life-time.
- All Data is *engraved* (not printed)
- Highly *accurate* • *Multi-Level dials* and scales.
- Projects a *quality image.*
- Recognized as an instrument that is *purchased* (not a "give-away").
- Vinyl Carrying Cases supplied on request (with your name gold-stamped).

In short, while considerably more expensive initially than the low-cost "give-away" the Hunter Calculator projects a far better image, does a much more effective advertising job and yet will produce a *profit* rather than an *expense!*

FACTORPAK CONVERTER FOR ELECTRONIC CALCULATORS



Model F.47 Pocket Factorpak Converter **H-64026 $21.50**

The Factorpak is an attractively-bound, loose-leaf type pocket book with lie-flat binding which contains, in easy reference form, 71 pages of conversion factors. All the factors are multiplying factors logically and simply arranged in tabular form for quick reference. Absolutely minimizes conversion errors!

Almost the equivalent of an electronic memory, it is specially designed to be used in conjunction with even the simplest electronic calculator and it is an indispensible accessory for anyone who has occasion to convert between values in metric, S.I., Imperial and U.S. Units.

The Factorpak is the most comprehensive collection of conversion factors ever compiled in such compact form. It includes most of the accepted units used by the various branches of commerce, engineering, technology and industry plus the usual everyday units of length, area, volume, weight, etc.

3,000 Conversion Factors

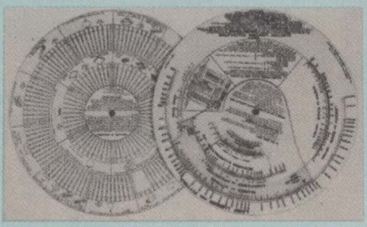
Including:
- Acceleration
- Area
- Calorific values
- Concentration
- Conductance
- Conductivity
- Coverage
- Density
- Energy
- Flow rates

Mass, weight
Moment of inertia
Momentum
Power
Pressure
Time
Surface Tension
- Force
- Fuel consumption
- Heat

Temperature
Traffic Factors
Volume
Velocity
Torque
Price/area/length,etc.
Viscosity
Wire gauge
Length
Luminance
and many others

ELECTRIC LIGHTING CALCULATOR
Model M.13

This calculator has been designed to give quickly and accurately, the number and size of lighting fittings for any installation by the lumen method. It indicates a logical and easily followed design sequence with each step dealt with by an individual section of the instrument.



Number and Size of Fitting:
On the front of the calculator simply set two dials to length of room, width of room, required illumination and coefficient of utilization and the size of each fitting can be read immediately opposite the chosen number of fittings and vice-versa.

Room Index
To find the coefficient of utilization for any fitting it is necessary to know the Room Index and scales are provided on the front of the calculator to rapidly determine this index for any size of room and height of fittings.

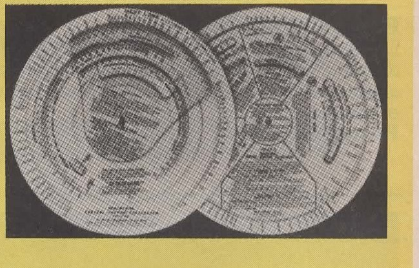
Coefficient of Utilization:
On the reverse side of the instrument are engraved the co-efficients of utilization for a wide range of standard lighting fittings.

7-5/8" Diameter Metric Model also available. **H-64023 $ $99.50**

INDUSTRIAL HEATING CALCULATOR
Model M.19

An instrument designed to simplify the calculations for all the larger heating installations where a full analysis of the heat losses must be made.

Heat losses through the structure are handled on one side of the calculator, each wall, floor, window, etc. being treated individually by simply setting length and width and using the temperature difference and the heat transfer coefficient to obtain the heat loss. The heat loss from air change is obtained in a similar manner.



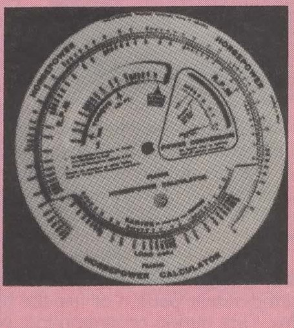
In addition, this calculator has an ingenious method for determining pipe sizes which saves considerable time. It is only necessary to decide what pressure loss can be allowed per 100 ft. run and all pipe sizes can be read off immediately according to B.T.U. carried and flow to return temperature drop. At the same time the water flow in the pipe is shown; or the pipe size can be obtained directly from the flow, if desired. Radiator size, boiler size, and pump size are also obtained and a further section gives heat losses from piping either insulated or left bare.

7-5/8" Diameter Metric Model also available **H-64021 $126.95**

HORSEPOWER & TORQUE CALCULATOR Model F.12

A popular, pocket-size calculator which carries out all standard Horsepower. Torque, and Load calculations.

The simple setting of a dial, for example, immediately calculates the Horsepower required to drive a particular load at a given radius and speed, or conversely indicates the maximum load for a particular available Horsepower.



In addition, this unit handles Horsepower and Torque conversions and conversions between H.P., Metric H.P., Kilowatts, B.T.U.'s per sec. and Kilo-calories per sec.

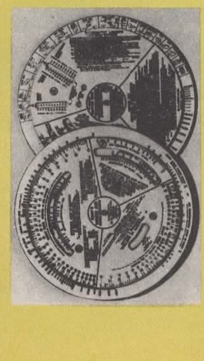
5" Diameter Metric model available
H-64016 $39.50

WARM AIR HEATING CALCULATOR
Model M.11

A complete method for designing warm air heating installations once the room heat requirements have been determined.

Gives warm air volume, heater size, duct size, pressure loss, equivalent length of duct fittings, velocities and also heat loss from ducting.

Deals with installations up to 24 inch diameter duct size.



7-5/8" Diameter Metric Model also available
H-64022 $113.50

INERTIA CALCULATOR FOR ROTATING MASSES Model F.10

A precision, easy-to-use instrument which, in a fraction of the time previously required, completes engineering calculations relating to inertia and acceleration of rotating masses, including: Inertia and referred inertia, Kinetic Energy, Acceleration Torques, Acceleration Times, Total Revolutions During Acceleration for complete rotary systems of all kinds in steel, cast iron, aluminum, brass and bronze.

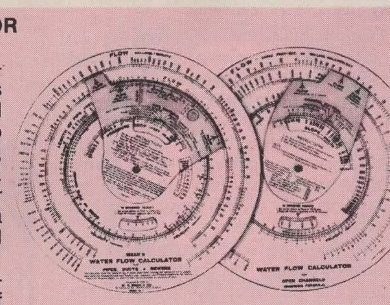
Calculations completed with ease by a simple setting of dials. Almost the equivalent of an electronic computer, without the cost and programming complications. An indispensible tool in any modern engineering and design department.

7-1/2" Diameter **H-64015 $74.50**

Flow Calculators

WATER FLOW CALCULATOR

Model M.7



For steel, cast-iron, non-ferrous, plastic, asbestos cement, concrete, vitrified and coated pipes and also open channels in earth, rock, concrete, metal and wood. One side of the calculator solves the rational formula for water flow in pipes and ducts of circular sections. The answers have been checked against a large number of well authenticated practical tests on actual pipelines from small metal tubes to long concrete tunnels up to 18 feet diameter and give accuracy appreciably better than usual formulas.

Flow 1.5 to 1,000,000 g.p.m. **Diameter** 0.5″ to 240″

The reverse side solves the Manning formula for the flow in open channels. **Flow** 50 to 5,000,000 g.p.m.

Channel area 0.7 to 2,000 sq. ft.

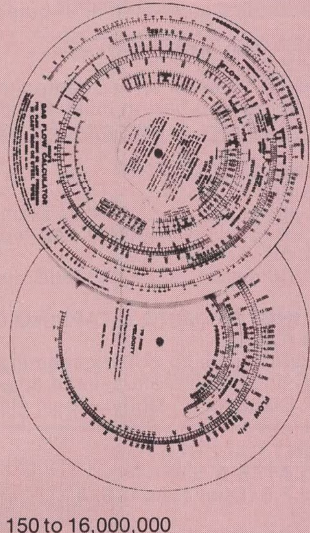
Metric model also available

7-5/8″ **Diameter** **H-64002 $117.50**

GAS FLOW CALCULATOR for LOW or HIGH PRESSURE FLOW WITH VELOCITY SCALES

Model M.8

WITH VELOCITY SCALES



This instrument is for calculations relating to the flow of all gases in pipes. It has two pressure loss scales, one dealing with the majority of the problems where the Terminal pressure is substantially atmospheric and the other for pipes at pressure up to 4,000 lbs./sq. in.

Handles all fuel gases, air, nitrogen carbon dioxide, etc., and is widely used for sizing factory compressed air and fuel gas systems, pipelines in chemical plants, coke ovens and process plants, manufactured gas and natural gas distribution.

Scale Ranges

Diameter: 3/4″ to 60″

Length: 10 ft. to 300 miles **7-5/8″ Diameter**

Flow: 150 to 16,000,000 c.f.h.

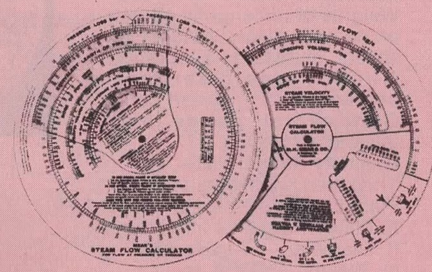
Metric Model also available

H-64003 $117.50

STEAM FLOW CALCULATOR

Model M.9

7-5/8″ Diameter



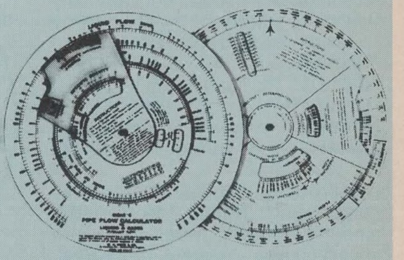
Determines the pressure loss of steam flowing in pipe lines under any conditions from high vacuum up to the critical pressure of 3,200 p.s.i., and at all velocities up to and including sonic flow. Valves, bends and fittings contribute considerably to the total pressure loss and a section is included to give the equivalent lengths of a wide variety of these fittings so that accurate allowances can be made for them.

The design for the calculator is based upon the modern rational formula. It takes account of the deviation of steam from the laws of a perfect gas and for the variation of its viscosity with temperature and pressure. Pipe sizes up to 48″ diameter.

Metric Model also available **H-64004 PRICE: $109.50**

PIPE FLOW CALCULATOR For Liquids & Gases (Turbulent Flow)

Model M.5



The majority of practical problems fall within the Turbulent Flow range and this calculator determines the required pipe size, flow or pressure loss for any liquid and also for any gas (at low pressures) flowing under Turbulent conditions. Pressure loss, flow or pipe size are found from the front of the calculator by a simple setting of two dials to the known details of length, viscosity, specific gravity, etc.

Scales on the reverse side permit an instant determination on whether the flow conditions are Turbulent or Laminar. Viscosities of over 50 liquids at various temperatures are also given on the reverse side along with their specific gravities. Further scales are incorporated for viscosity conversion, including Redwood, Saybolt, Centistokes, and on the metric model, Engler degrees.

Scale Ranges:

Diameter: 1/4″ to 40″ Liquid flow: 5 to 1,000,000 g.p.h.

Length: 5 ft. to 5,000,000 ft.

Gas Flow: 50 to 1,000,000 c.f.h.

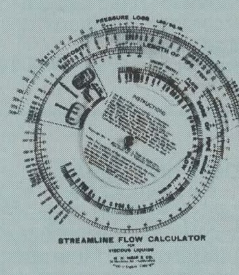
Pressure Drop: .01 to 500 lbs./sq. in.

Metric model also available

7-5/8″ Diameter **H-64001 $115.50**

STREAMLINE (LAMINAR) FLOW CALCULATOR

Model M.6



This instrument is designed to solve the streamline flow formula applicable to the flow of more viscous liquids such as fuel oils, lubricating oils, syrups, etc. through pipe lines and also the flow of liquids of low viscosity in small pipes. The latest design includes viscosity conversion scales for Redwood, Saybolt, Engler and Centistokes.

Scale Ranges:

Liquid Flow .001 to 15,000 g.p.m. Pipe Dia. 0.1″ to 13″

.001 to 15,000 tons/hr.

Pressure Drop .01 to 600 lbs./sq. in.

Metric Model also available.

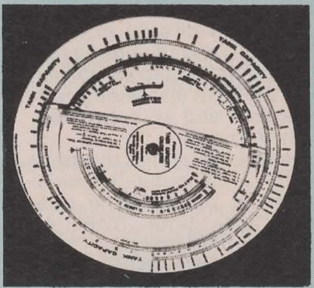
5-5/8″ Diameter

Length 6 to 3,000 ft.

H-64006 $79.50

TANK CAPACITY CALCULATOR

Model F. 11



Calculates capacities of rectangular and cylindrical tanks or containers in Cu. Yards, Cu. meters, Cu. feet, gallons, gallons (Imp.) and litres. To operate, it is only necessary to set the scales to the known sizes of the container and read off the cubic capacity in any required units.

Alternatively, the scales are set to the known cubic capacity or volume and the container sizes may then be determined.

Special section covers part-fill horizontal cylindrical tanks filled to any level.

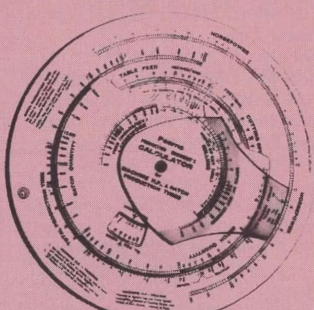
Capacity Range

Tank length:	1 ft. to 250 ft. or metric equivalent
Tank width:	1 ft. to 250 ft. or metric equivalent
Tank depth:	4 in. to 100 ft. or metric equivalent
Diameter:	4 in. to 100 ft. or metric equivalent
Volume:	0.1 to 10,000,000 (cu. ft. gals, or litres.)

7-1/2″ Diameter **H-64008 $79.50**

PRODUCTION ENGINEER'S CALCULATOR

Model F.5



Machine Horsepower Requirements: Computes machine horsepower required for any given combination of cutting speed, feed, depth of cut and material.

Batch Production Times: Calculates batch production times for a given quantity and time each (or number per hour), or vice-versa.

Machining Times: Calculates machining times for turning, milling, drilling, etc. for given feed rate, cutting speed, diameter, length and number of cuts.

Speed, Feed, and Spindle R.P.M. Calculations: Works out speeds, feeds, spindle r.p.m., etc., including conversion between feed/min. and feed/rev.

An indispensable tool for any production engineer and a great timesaver. All scales have extremely wide range, sufficient to cover almost any size of work. Metric Model available.

7-1/2″ Diameter **H-64085 $97.50**

WORK STUDY ENGINEER'S CALCULATOR For STANDARD TIME CALCULATIONS

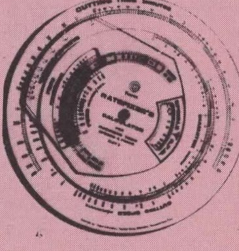
Model F.39

Indispensable to Work Study Engineers in any industry, this unit rapidly converts observed times to basic or normalized times at any required standard rating level. An additional section is provided for rapid calculation of percentage additions or reductions to times.

5-1/2″ Diameter H-64054 $52.50

ESTIMATOR'S UNIVERSAL CALCULATOR

Model F.4



A reduced size simplified version of the Production Engineer's Calculator (Model F.5), incorporating the machining time and speeds and feeds sections only. A valuable tool for the personal use of estimators and foremen.

5″ Diameter H-64055 $53.50

COSTING & ESTIMATING CALCULATOR

Model F.20

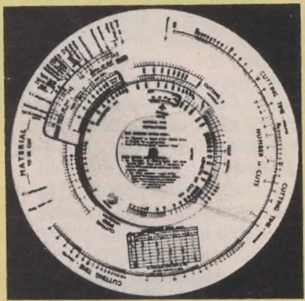
A simple-to-operate instrument for all time and cost calculations which do not require comptometer accuracy. The time scales are calibrated directly in hours and minutes and the hourly rate scales are calibrated in dollars, so that a simple dial setting converts a time and an hourly rate directly into cost.

Completely overcomes the usual difficulty of working out such calculations on the slide rule. Covers any time from 40 seconds to 1000 hours.

7-1/2″ Diameter H-64050 $53.50

MACHINING TIME CALCULATORS

Models F.1, F.2, F.3



These calculators provide a complete system of unequalled simplicity for determining consistent machining times, quickly, easily, and accurately, without time study. The information they provide is so complete that they may be used by personnel with very limited experience.

The separate calculators are available, as described below, one for each of the most common groups of machining operations. In each case the total floor-to-floor time for a particular operation is obtained by adding together time elements determined in three separate places on the calculator.

Cutting Time: Read off directly on the front of the calculator after setting dials to relevant details of operation. Information on cutting speeds and feeds is also incorporated.

Loading & Handling Time: Separately determined by a simple setting of dials on the reverse side of the calculator. All necessary allowances relating to weight, size, accuracy, type of operation, etc., are taken into account.

Set-up Time: Determined in another section of each calculator.

LATHEWORK CALCULATOR

Model F.1

Calculates times for turned components of all kinds on centre lathes, turret lathes and boring mills. Extremely wide range.

7-1/2″ Diameter Metric Model also available **H-64056 $117.50**

MILLING CALCULATOR

Model F.2

Calculates times for all kinds of milling operations on vertical or horizontal milling machines. All types of cutters, fixtures, dividing heads, etc.

7-1/2″ Diameter Metric Model also available **H-64060 $117.50**

DRILLING, REAMING & TAPPING CALCULATOR

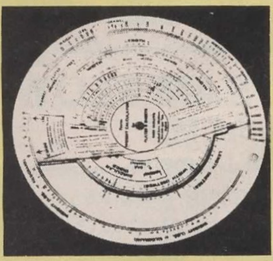
Model F.3

Calculates times for drilling, reaming, or tapping holes of all sizes in lathes, single and multi-spindle drills.

7-1/2″ Diameter Metric Model also available. **H-64061 $117.50**

WEIGHT CALCULATOR For PLATES & SHEETS

Model F.8 (Dual Type U.S. & Metric)



This calculator by a simple setting of scales, calculates weights of plates and sheets of all sizes and thicknesses in steel, brass, or aluminum, English or Metric units.

Calculates: Weights of any quantity of sheets up to 500. Weights of rectangular sheets or circular discs. Weights of sheets in lbs. or kilograms. Quick cross-reference between U.S., British and Continental gauge and thickness systems.

Capacity Range: Plate Thickness — .010 in. to 6 in. Plate Lenght — 4 in. to 100 ft. Plate Width — 4 in. to 20 ft. Diameter — 4 in. to 400 in. Weight — 0.2 lb. to 100,000 lb. or equivalent metric units.

7-1/2″ Diameter H-64042 PRICE: $68.50

WEIGHT CALCULATOR FOR CASTINGS & FORCINGS

Model F.7 (Dual Type, U.S. & Metric)

Quickly calculates the weights of castings, forgins and machined components, intricate or simple in shape, large or small in size, in English or Metric units.

Basically an easy-to-use circular slide rule of special design, it determines almost instantaneously the weights of the various simple geometric shapes into which even the most intricate of components can normally be divided. The only calculation necessary is the simple totalling-up of separate weights provided by the calculator. Suitable for weights of items in steel, cast iron, lead, copper, bronze, brass, sinc and aluminum.

7-1/2″ Diameter **H-64043 PRICE: $64.50**

RE-ORDER POINT CALCULATOR (for Inventory Control)

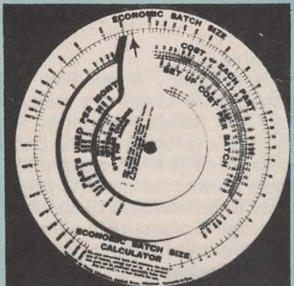
Model F.37

By a simple dial setting this unit immediately and accurately establishes the order point for any stocked item. It takes into account the average usage rate of the item, the lead time for replacements and any required safety stock level.

This is an ideal and inexpensive way of ensuring that your stock shortages and excesses are kept to an absolute minimum.

7-1/2" Diameter H64046 $64.50

ECONOMIC BATCH SIZE CALCULATOR Model F.16

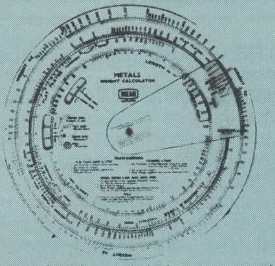


A remarkable, low-priced calculator, simple-to-use but which can be responsible for great savings in production costs. By a simple dial setting, it computes the mathematical absolute lowest cost per part for given usage rate, set-up cost, interest and storage charges. May also be used to determine ideal delivery batch quantities for bought-out parts.

An essential aid for Production and Material Controllers, Buyers, Cost Accountants and any executive concerned with production economy.

5" Diameter H-64047 $52.50

UNIVERSAL METALS WEIGHT CALCULATOR Model M.26



This comprehensive unit solves almost all weight calculations involving standard shapes and most common metals.

One side gives weights directly for sheets, plates, strips, rounds, squares, hex discs, wire, cylinders, tubes, and coils, in aluminum, steel, cast iron, copper, brass, lead, molybdenum, antimony, zinc, tin and mangenese. The reverse side handles weight calculations involving most American standard rolled-steel sections.

Scale Range

Plates: ¼" to 20' width, .01" to 8" Thickness

Cylinders & Tubes: ¼" to 13' Mean Diameter

Similar range for other shapes. Metric Model also available.

7-1/2" Diameter H-64044 $118.50

PROBABILITY & STATISTICAL QUALITY CONTROL CALCULATOR

Model M.17

This instrument solves quickly and accurately the statistical calculations involved in setting up methods for the control of quality of goods received and quality in batch and mass production. It is divided into seven sections dealing with POISSON PROBABILITIES, ACCEPTANCE SAMPLING METHODS, OUTGOING QUALITY, QUALITY CONTROL CHARTS, SAMPLING BY ATTRIBUTES, SAMPLING BY VARIABLES, AND NORMAL PROBABILITIES. The Poisson Probability section can be used for a wide range of other statistical calculations besides those involved in quality control.

Poisson Multi-Event Probabilities If an event is known to happen on say 3% of all occasions, it will be expected to happen 1½ times in 50. Actually it can only occur 0, 1, 2, 3, or 4, etc. times and Poisson Probabilities show the probability of it occuring 0, 1, 2, 3, or 4 etc. times for any particular expectation (in this case the expectation is 1½). This very comprehensive section of the calculator gives the Poisson Cumulative Probabilities for up to 20 occurences, by simply setting the arrow to the Expectation. The answers are read off much more conveniently, accurately and quickly than with conventional charts.

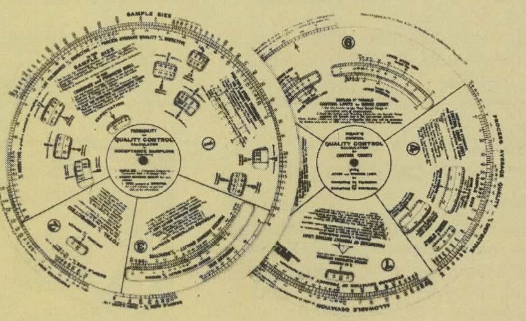
Acceptance Sampling Methods Provides a scientific basis for accepting or rejecting a product by checking samples instead of entire batch, and the Poisson Probability section enables the sampling size, the acceptable number of defectives and the risk involved in accepting below average quality to be determined. In addition, it gives the risk of rejecting good material and enables the Operating Characteristics Curve to be plotted.

The most economical method requiring the least amount of inspection is found from Section 2 and the average outgoing quality of the finished product from Section 3. In addition, this instrument calculates statistical control chart limits, when sampling by attributes or variables. Finally, the Normal Probability section gives areas under the Normal Probability Curve so that knowing the standard deviations of the product from the sampling sections, the percentage falling outside any set of limits can be found. It can be used for many probability calculations where the Normal Distribution is applicable.

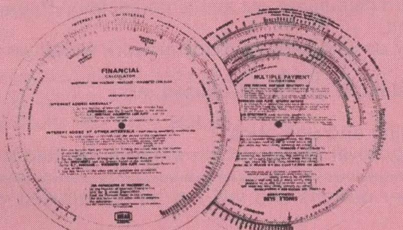
This instrument is an absolute essential for Quality Control departments and other statistical workers.

Engraved in three colors.

7-5/8" Diameter H-64059 $117.50



FINANCIAL CALCULATOR Model M.23



A remarkable instrument for business, purchasing, investment, costing and accounting calculations and decisions. A fraction of the size and cost of electronic versions. By a simple setting of two dials it answers such questions as:

—Pay cash for new equipment?—Borrow from bank?
—Lease?
—Value of equipment after any number of years of depreciation?
—Actual interest rate in various transactions?
—Future value of a current investment?
—Present value of future profits or income?

Leasing-Mortgage Transactions

The calculator gives the weekly, monthly or yearly repayment necessary allowing for compound interest on the outstanding balance. It indicates the actual compound interest included in such transactions enabling decisions to be made as to whether bank or other forms of lending are more economical.

Discounted Cash Flow

It gives the present value of any sum to be received in the future such as:

A) How much is a regular payment of X dollars per month over Y years worth as a lump sum today allowing for compound interest?

B) What is the present worth of X dollars profit next year, Y dollars the year after and Z dollars in third year?

Investment

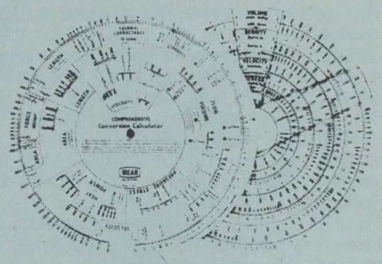
Tells in a similar manner the growth rate of any sum at compound interest (added weekly, monthly, quarterly or yearly) and the final sum accumulated. Also, the sum accumulated from regular investment for any period of time at any compound interest rate.

Depreciation

It gives the written-down value of any equipment after any period and any rate of depreciation.

7-5/8" Diameter H-64013 PRICE: $113.50

COMPREHENSIVE METRIC CONVERSION CALCULATOR
Model M.22



Designed primarily for Engineers and Designers, this calculator will perform the following conversions:

Length and Area: ins. - mm., ft-yds-meters, sq. ins. - sq. mm - sq. cm., sq. ft. sq. yds - sq. meters.
Volume: ins.-mm., ft-yds -meters, sq. ins.-sq. mm. -sq. cm., sq. ft.- sq. yds.- sq. meters
Flow: U.S. g.p.h.-U.S. g.p.m.-Imperial g.p.h. - Imperial g.p.m. - U.S. barrels per hour -c.f.h.-c.f.m. -c.f.s.-cu.yd/hr.-cu. meter/hr.-litres/sec.cu. meters/min.
Pressure & Stress: lb./sq. in.-ins. w.g.-ft. w.g.-meters w.g.-mm H.G.-ins H.G.-bar-millibar-Torr-atmosphere-Kg/sq.cm.-Tons/sq.in.
Thermal Conductance: watts/sq. meter/Deg. C.-Kilo-cal./h/sq. meter-/Deg. C.-B.T.U./h/sq. ft./Deg. F.
Heat & Power: H.P. B.T.U./h.-Kilocal/h-kilojoule/h.-watts-kilowatts.
Viscosity: Centistokes-Redwood-Saybolt Universal-Engler Degrees
Density: lbs./cu.in.-lbs. cu.ft.-kg./cu.meters-grams/litre
Velocity: m.p.h.-meters/sec., ft/min.-meter/sec.
Weight & Force: lbs.-kilograms-decanewtons.
Temperature: Deg. F.-Deg. C.

5-3/4" Diameter **H-64027 $53.50**

COMBUSTION EFFICIENCY CALCULATOR
Model M.25

The efficiency of a boiler is determined largely by the heat lost to any excess air supplied and the loss in high temperature flue gases.

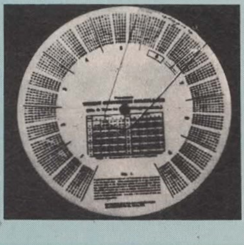
This calculator determines the efficiency from the CO_2 content of the flue gas and the flue gas temperature.

At the same time it also indicates the percentage of excess air being supplied.

Gives answers for coal, coke, manufactured gas, natural gas, and fuel oils (residual and distillate). Calibrated in metric units.

5-3/4" Diameter **H-64058 $64.50**

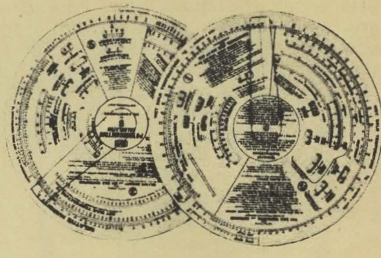
HIGH ACCURACY WEIGHT CONVERSION CALCULATOR
Model F.29



This calculator provides a very simple method for obtaining English to Metric weight conversions with a 6-figure accuracy and range from 0.1 lb. to 999 tons.

5" Diameter **H-64035 $28.50**

PSYCHROMETRIC CALCULATOR
for Conditioning & Meteorology
Model M.24



This calculator determines all the properties of moist air directly from any of the three basic sources of measurement. By a single setting of: Wet Bulb to Dry Bulb Temperature (screen or aspirated) or, Wet bulb Temperature to Depresaion (screen or aspirated) or, Dry Bulb Temperature to Relative Humidity it gives:

Dew Point
Frost Point
Latent Heat
Sensible Heat
Vapour Pressure
Moisture Content
Specific Enthalpy
Specific Volume
Specific Humidity
Mixing Ratio
Vapour Density
Attitude Correction

High accuracy eliminates interpelation from tables and charts as temperature scales are calibrated in 0.2 deg. settings to 0.1 degree or less. The Relative Humidity Scale is also very accurate.

The basic properties are per kg. of dry air at standard atmospheric pressure of 1013.25 mb. but the Specific Humidity and Mixing Ratio are given for any barometric pressure down to 300 mb. Additional scales allow for correction of the Wet Bulb Depression for the effects of low barometric pressure in altitude. The properties of mixed air from two or more different streams can also be obtained:

Scale Ranges:

Wet Bulb Temp.	0 to 29 deg. C
Ice Bulb Temp.	—50 to 0 deg. C
Dew Point	—53 deg. to 29 deg. C
Frost Point	—50 deg. to 0 deg. C
Dry Bulb Temp.	—53 deg. to 44 deg. C
Depression	0 deg. to 22 deg. C

7-3/4" Diameter Metric Model Only **H-64057 $126.50**

STEEL HARDNESS CONVERSION CALCULATOR
Model F.6

Handy calculator for Engineers, Metallurgists and anyone concerned with properties of steels. It has a very wide range and provides a virtually instantaneous method for converting from one hardness value to any other.

All the recognized hardness scales are incorporated, including: Brinell (steel or Tungsten-carbide ball), Firth, or Vickers, Monotron, Herbert Pendulum, Scelerescope, Knoop, Rockwell B, Rockwell 'C' Rockwell, Rockwell Superficial 30N, and Rockwell Superficial 30T.

Additional scales give the equivalent tensile strengths in tons and lbs., and also Brinell impression diameters. A tremendous improvement on conversion tables and charts.

5" Diameter **H-64024 $37.50**

CUSTOM MADE CALCULATORS
How We Work With You To Solve Your Problems

- The simplest approach, of course, is if you can use one of our existing standard calculators (or some modification thereof) which can then be supplied with your name, logo and message engraved on the face of the unit.
- If a special design is required the next simplest approach is for you to supply us with camera-ready artwork which we can photographically reproduce.
- Alternatively, for special designs: Give us the mathematical formulas and relations you want utilized, or: Give us the empirical data to be utilized.
- From the above, and based on quantity, we will submit a quotation for tooling and unit price.
- If an order is placed we will proceed with design, tooling and prepare an approval sample which will be submitted to you. Only after your approval will we complete the production order.
- Special designs prepared to your order are automatically your proprietary designs and will not be reproduced without your express permission.

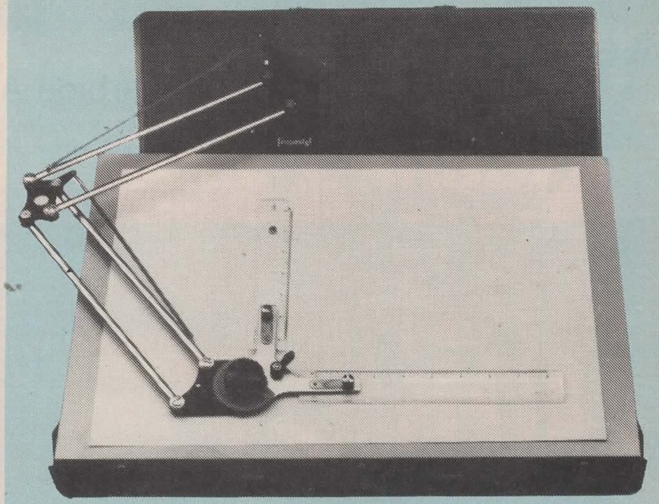
General Policies

- Standard calculators supplied with your name gold-stamped on carrying case. Minimum Quantity 25.
- Standard calculators supplied with your logo engraved on the calculator. Minimum Quantity: 100
- Design modifications to standard calculators including your name and message engraved on calculator face. Minimum Quantity: 500
- Special design calculators to your specs. Minimum Quantity: 500
- All prices by quotation only.
- Delivery of approval sample can generally be made within 4-5 weeks from receipt of purchase order.

How Hunter Calculators Can Work For You

The care and expertise used to design and fabricate our line of standard calculators is now available to solve your problems and to supply *special* calculators specifically for use by you and your customers. If you supply equipment, material or systems which require various types of data manipulations by the user either for selection or set-up and adjustment or time or price calculations or for any purpose what-so-ever we can supply a rotary dial calculator solution which you will be proud to add to your product line, which will enhance your image and which will please your customers. (The fact that your name is in front of the customer every time he uses the calculator doesn't hurt either!)

Hunter Drafting Equipment



"TRAVELER" PRECISION PORTABLE DRAFTING KITS DELUXE SERIES

These kits are built to the highest professional standards and constructed of the finest available materials. Consists of a precision drafting machine mounted on a rigid vinyl-covered board which is an integral part of a leatherette attache carrying case. Board includes adjustable tilt-up feature. For home, office, laboratory and shop.

FEATURES:

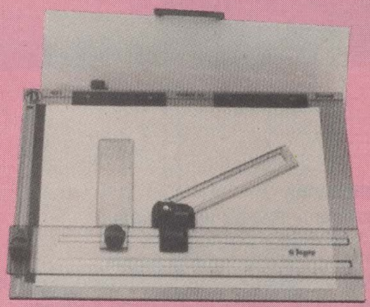
- Precision construction
- Removable scales
- Spring-tensioned arms
- Detent "clicks" at 15° intervals on protractor
- General purpose compartment in carrying case for paper & instruments.

Model 620 13½" x 19½"	**H64,070**	**$269.50**
Additional scales-metric	**H64,071**	**27.50**
Model 624 19½" x 27½"	**H64,072**	**445.50**
Additional scales-metric	**H64,073**	**46.50**

DRAFTING MACHINE ONLY, FOR ATTACHMENT TO YOUR OWN BOARD

Identical hi-quality units used on our deluxe portable drafting kits.

Model 602-Board Coverage 13½" x 19½"	**H64,086**	**$168.50**
Additional scales-metric	**H64,087**	**$39.50**
Model 604-Board coverage 23½" x 31½"	**H64,074**	**$299.50**
Additional scales-metric	**H64,088**	**$67.50**



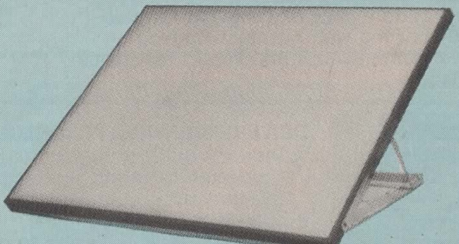
NEW "TRAVELER" PRECISION PORTABLE DRAFTING KITS ECONOMY SERIES

These kits, while extremely light and compact, include all the features required to produce top-notch professional work. Based on a simplified "track-type" drafting system with quick-lock adjustments, these are ideal units for those with occasional drafting requirements at desk, in plant, during travel or at home.

Features:

- Light-weight but sturdy and accurate construction
- Quick-adjust, track-type drafting system
- Detent "clicks" at 15° intervals on protractor
- Simple magnetic clamp for drafting paper
- Carrying case included

Catalog **H64,075**, Model 601, 13½" x 19"
Complete with carrying case **$94.50**

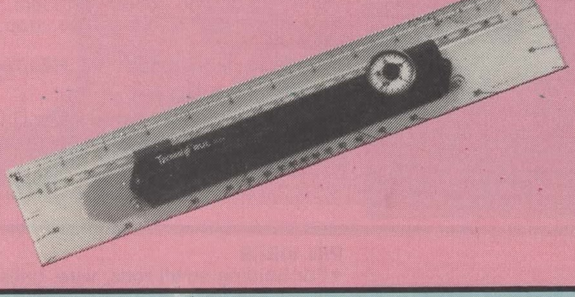


PORTABLE TRANSLUCENT BOARD, MODEL 603/B

A Low-Cost Light-Table System

This unit incorporates a shatter-proof translucent acrylic drawing surface and is designed to be used with any convenient light source to perform all light-table applications including viewing and modifying transparencies, preparation of stencils and screens, tracing, checking, retouching, printed circuit design, etc. With the addition of Techno-Rule No. 107 or Drafting Machine No. DE4010, it can also be used as a complete portable or table-top drafting system.

Catalog **H64,075 S**
Translucent Board (16" x 23¼")
Model 603/B **$126.50**



TECHNO-RULE A Unique, Miniature Drafting Instrument

This ingenious instrument, no larger than an ordinary 12" rule, converts any clip-board or desk-top into a practical drafting system. The unit is basically a rolling ruler incorporating the following features:

- A 12" scale calibrated in 1/32" units
- A rotary dial calibrated in 1/16" units that measures distance rolled.
- A calibrated angular scale
- Pencil locator holes.

It will perform the following drafting functions:

- Drawing of horizontal lines
- Drawing of vertical lines
- Drawing of lines at any angle
- Drawing of accurately spaced parallel lines at any angle.

Truly a vest-pocket drafting system for those on-the-go.

Catalog **H64,076** Techno-Rule No. 107 - **$28.50**

Ellipsographe
CARALL

ELLIPSOGRAPH

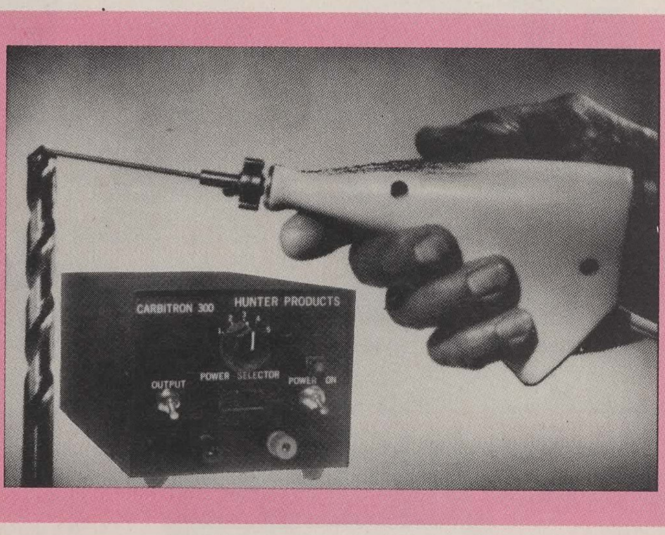
With the help of the Ellipsograph in folding case, metal parts made of brass, chrome or rolled gold.

Possible ellipse sizes:
From 100 x 150 up to 300 x 350 mm

(Oder-no: 50EH) from 0 up to 300x350 mm
C49,780 $29.50
(Oder-no: 51 EH): from 0 up to 230x350mm
C49,781 $34.50

Carbitron Model 300

The Low-Cost Tungsten-Carbide Applicator with the Heavy-Duty Features



EXTEND THE LIFE OF TOOLS AND WEAR PARTS UP TO 1000%

This simple, easy-to use process applies Tungsten Carbide and Titanium-Carbide to tools and wear parts with resultant greatly improved cutting characteristics and wear life. The Carbitron 300 System, consisting of an adjustable power supply and a vibrating hand-tool, is a heavy-duty unit incorporating the features of units selling for 5X-10X it's low price.

With savings in down-time, tool-changing, tool-sharpening and tool purchases, the Carbitron 300 will pay for itself in an amazingly short period.

The Carbitron 300 Tungsten-Carbide Deposition System is a process whereby minute particles of Tungsten-Carbite are diffused into and deposited onto metallic surfaces for the purpose of improving wear characteristics and also for the correction of defects, mistakes, or repairs.

The process employs a Tungsten-Carbiee electrode mounted in a small hand-gun vibrator coupled to a specially designed power supply. As the Tungsten-Carbide electrode repeatedly contacts and withdraws from the work surface, small disruptive arcs are created which dislodge Tungsten-Carbide ions from the electrode and deposits them into and onto the work surface. The Tungsten-Carbide deposition layer forms a true metallic bond with the work surface. The Tungsten-Carbide deposition layer forms a true metallic bond with the work surface with a hardness of 78-80 Rockwell C.

The thickness of the deposition layer is controlled by the discharge intensity selector on the power supply and may be varied from 0.0002" to 0.001" in increments of 0.0002".

The Tungsten-Carbide electrodes supplied provide excellent yield. Typically, a 1/8" x 2-1/2" electrode will coat approximately 50 sq. in. of surface with an average deposit thickness of 0.0005".

Typical Applications

- Extend tool life • Repair worn parts
- Resize and salvage worn tools
- Obtain self-sharpening cutting edges
- Protect wear surfaces • Improve surface textures
- Create non-brittle Tungsten-Carbide surfaces
- Increase friction and wear-life of grippers
- Improve performance of Tungsten-Carbide tools by coating with Titanium-Carbide
- Improve thermal-shock and impact resistance of surfaces

Standard Equipment

Discharge Power Supply
Vibrator Hand Tool
Power Cable
Ground Cable
1/8" x 2½" Tungsten-Carbide Electrode
1/16 x 2½" Tungsten-Carbide Electrode
1/8" x 1" Titanium-Carbide Electrode
Instruction Manual

Carbitron 300 Specifications

Dimensions: 11"L x 6"W x 5" H
Weight: 15 lb.
Voltage: 110V, 60 HZ, 4 amp
Nominal Power: 0.4 KW

H64,082 **$695.00**

Additional Electrodes:

H64,090	- Tungsten-Carbide	1/8" x 2½	$15.50
H64,091	- Tungsten-Carbide	1/16" x 2½"	$13.50
H64,095	- Titanium-Carbide	1/8" x 1"	$19.50

GENERAL
DRILL GRINDING KIT
SHARPEN DRILL BITS WITH PRECISION SIDE GRINDING
GRINDING WHEEL
DRILL GRINDING ATTACHMENT
DRILL GRINDING KIT

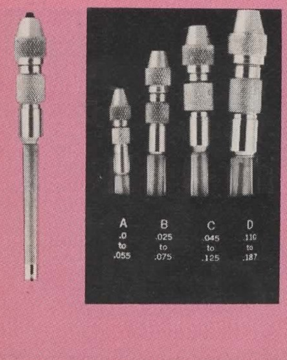
CAPACITY
Fractional drills 1/8" to 3/4"
Number size drills 30 to 1
Letter size drills A to Z
Millimeter size drills 3.0 to 19.0

DRILL GRINDING ATTACHMENT

- General's drill grinding attachment is engineered to permit sharpening of drill bits to factory accuracy.
- Extends the life of drill bits.
- Angle adjustments lock in to grind drill bits for more accurate drilling in a variety of materials.
- Automatically adjusts to give correct clearance angle.
- Can be used with standard electric bench grinders or with surface grinders.
- Equally at home in machine shop and home workshop.
- Instructions Included **H49,769** **$31.50**

DRILL GRINDING KIT

Our drill grinding kit includes the Drill Grinding Attachment No. 825 and its specially designed Grinding Wheel No. 826 **H49,770** **$39.50**



PIN VISES

- For holding small rods, wire, drills, taps, and other small tools.
- Tool steel collets are hardened and grip firmly when screw chuck is tightened.
- Nickel plated body is hollow to permit holding of long rods of wire.
- Available in individual sizes.
- Conforms to government specifications.

C49,765	**$31.35**	Set of 4 sizes, A.D., listed below, packed in a plastic case.
C49,766	**$ 6.90**	0 to .055" (0 to 1.40 mm)
C49,767	**$ 7.45**	.025 to .075" (64 to 1.91 mm)
C49,768	**$ 8.00**	.045 to .125" (1.14 to 3.2 mm)

ECONONO-BLAST PORTABLE SAND BLAST KIT

The Low-cost; High Quality portable Sandblast gun that no shop should be without. Opens a whole string of new possibilities for the removal of rust from surfaces which are particularly difficult to get at. Also used for paint and dirt removal and texturing and etching. Equipped with sturdy plastic screw-top container. Capacity - 1 qt. Complete with hardened blast pipe and nozzle.

TECHNICAL DATA

Air Pressure between 70 and 220 p.s.i. depending on application. The higher the pressure the better the performance and the lower the abrasive consumption. Optimum working pressure 140-220 p.s.i.

OPERATING INSTRUCTIONS

Fill with abrasive-connect up air hose — put on protective mask — and then blast away!

AIR CONSUMPTION 70-85 p.s.i.: Approx. 6½ C.F.M.
130 p.s.i.: Approx. 9 C.F.M. 220 p.s.i.: Approx. 11 C.F.M.

ABRASIVES HANDLED

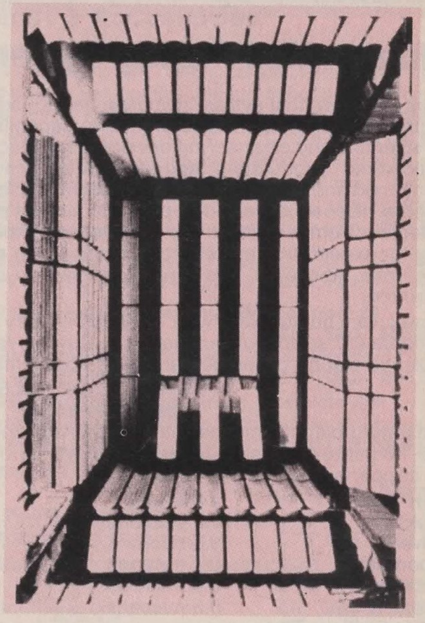
Can be used in 16 to 1000 grit sizes. Can utilize silica sand, metal shot or aluminum oxide abrasives. **Gun only MODEL 63E H64,078 $139.50**

COMPLETE KIT CONSISTING OF:

- 63E Sand Blast Gun with Hardened Blast Pipe
- 1482 - F100 Filter Respirator Dust & Mist #AB5013
- #30 Mesh, Fine Aluminum Oxide abrasive - 1 quart

Complete Kit	**MODEL AB5030**	**H64,079**	**$195.50**
Spare Nozzle:	**MODEL AB5005**	**H64,080**	**$22.50**
F-100 Filters (Box of 50)	**MODEL AB5014**	**H64,081**	**$56.50**

Thermo-Ceramic Far Infrared Heaters

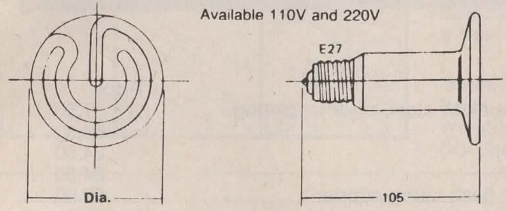


UNSURPASSED FOR INDUSTRIAL HEATING & DRYING APPLICATIONS

Nearly all materials to be heated or dried absorb especially well in the medium-to-long-range wavelengths of the infrared spectrum. This range lies between about 3 and 10 microns. This also coincides very closely with the emissive spectrum of Thermo Ceramic heaters thus making these units highly efficient and effective for most industrial heating and drying applications.

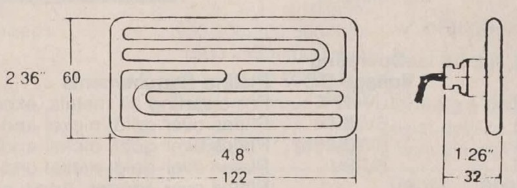
These units are constructed with nickel-chromium alloy elements embedded in a special refractory ceramic which is in turn surfaced with a unique glaze. This glaze exhibits excellent radiation properties and a remarkable resistance to temperature changes. It is insensitive to splashes of cold water even at full operating temperature and is absolutely resistant to oxidation. As a result these heaters are extremely durable and will generally give satisfactory service for periods of 5000-10,000 hours.

APPLICATIONS
- Heating plastic films and sheets in various forming applications
- Packaging
- Softening of plastic sheets before embossing
- Gelling paste coats on fabrics
- Hardening of synthetic threads
- Activation of thermal adhesives
- Drying synthetic emulsions
- Heating of paper pulp
- Thermal hardening of synthetic netting
- Quick drying of lacquered paper and cardboard
- Drying of skins & spray coated leather
- Quick drying of gummed and glued paper
- Drying and burning-in of protective varnish in cans & tubes
- Drying and burning-in of lacquered sheet-metal parts
- Burning-in of powder coatings
- Drying the glaze on ceramic tiles
- Quick hardening of cement
- Tempering layered glass
- Preheating the welding seams in pipe construction
- Adherence of sound-absorbing mats in the consumer goods and automobile industries
- Heating climatic chambers
- Drying fabrics
- Accelerating glue curing
- Hardening of epoxy resins
- Various food applications including baking, drying, heating, warming & melting

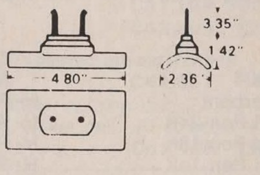


	(100 mm diam.)		(125 mm diam.)	
200 watt	H64074	$42.50	H64077	$41.50
350 watt	H64075	$52.50	H64078	$51.50
500 watt	H64076	$64.50	H64079	$61.50

Please Specify Voltage



Type FS-9	(245 × 60 mm)	220/230V	(122 × 122 mm)	220/230V
150 watt	H64085	$34.50	H64090	$36.50
250 watt	H64086	$34.50	H64091	$39.50
400 watt	H64087	$38.50	H64092	$45.60
650 watt	H64088	$44.50	H64093	$49.50
1000 watt	H64089	$48.50	H64094	$56.50



Type CS-1 (245 × 60 mm). 220/230v		
150 watt	H64080	$35.50
250 watt	H64081	$41.50
400 watt	H64082	$48.50
650 watt	H64083	$59.50
1000 watt	H64084	$72.50

Vacuum Pick-Up

VACUUM PICK-UP-Handles delicate miniature objects without scratching, breaking or pinching; avoids contamination of the parts; and performs tweezer functions such as sorting, picking up, holding, carrying, etc.

The Arrow Vacuum Pick-up is a lightweight, portable unit completely assembled and ready for immediate operation as soon as the proper size tip is selected and installed. Vacuum is created at the tip by placing the forefinger over the control hole on the pencil handle... to break the vacuum just remove your finger from the hole.

The vacuum generator is small (4½" high, 2¾" in diameter), adjustable so that you can dial the exact vacuum pressure, and creates up to 14" Hg Vacuum (an air flow of 125 cubic inches per minute). Unit is completely noiseless during operation.

C49.756 $119.00

4 Replacement filter **C49,757A $15.50**

Set contains:
- Vacuum generator
- Anodized aluminum cylindrical probe
- In-line filter to protect the generator
- Operates on 115V AC.
- On-Off Switch
- 4 foot length of tubing
- 5 stainless steel probe tips

REPLACEMENT PROBE TIPS $4.95 each

No.	Gauge	O.D.	I.D.
C49,758	15	.071"	.052"
C49,759	16	.065"	.045"
C49,760	21	.032"	.020"
C49,761	22	.028"	.016"
C49,762	23	.025"	.013"

DEMAGNETIZERS

For demagnetizing small instruments such as watches and clocks, as well as small tools.

INSTANTANEOUS DEMAGNETIZER - Object is placed on top center of box, button is pushed, and in an instant it is completely demagnetized. Pilot light flashes indicating charge has been released. Much stronger than ordinary demagnetizers. Cannot overheat or burn out, even if left plugged in continuously. Operates on 115v A.C.

C49,763 $159.50

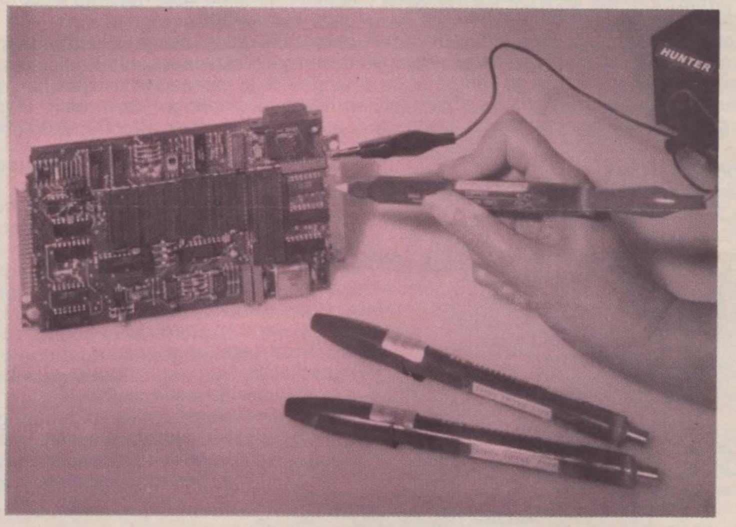
SMALL K & D DEMAGNETIZER — Measures 3-1/8" long x 2-1/8" wide x 2-3/4" high. Object is held in centre of coil. Button is pushed, turning on alternating current, which constantly mixes direction of field. Object is then drawn away to about 2 feet. Operates on 115v AC.

C49,764 $53.50

Hunter-Mini Plating System

This new, low cost system has been developed specifically to provide a simple and convenient electro-plating capability for such applications as scientific and engineering development, electronic and other repairs, specialized production, and arts/crafts activities. Completely self-contained and portable it is equally useful in lab, plant or office. Utilizing special disposable cartridge-pens this system permits an instantaneous selection from a wide variety of plating possibilities without the necessity for expending time, effort and expense in preparing special plating solutions. Above all, it is simple and safe to use with no special skill required.

Power can be supplied with a 12 volt battery and rheostat, your own variable DC supply or our Rectifier. Current requirements: 0.1 amp. Average plating coverage per pen is approximately 1500 sq. in.



TECHNICAL DETAILS

Plating Thickness

Maximum plating thickness attainable with the mini-plating system is 1.5-1.8 microns. Typical times to achieve various thicknesses on a 1" x 1" copper surface are as follows:

Pen Type	2 Minutes	3 Minutes
Gold	0.5 microns	0.8 microns
Silver	0.5 microns	0.8 microns
Rhodium	0.7 microns	1.0 microns
Nickel	0.4 microns	0.6 microns
Black-Nickel	0.5 microns	0.6 microns
Copper, Zinc, Tin Chrome Color	0.3 microns	0.5 microns

Pens	Catalog No.	Operating Voltage DC	Plating Requirements	Price
Absorbent	H- PL-1002	10V-12V	For cleaning all metals, except stainless steel, prior to plating.	37.50
Gold Pen-24K	H- PL-1003	6V-8V	Plates over gold, nickel and silver.	84.50
Gold Pen-18K	H- PL-1004	6V-8V	Plates over gold, nickel and silver.	84.50
Gold Pen-14K	H- PL-1005	6V-8V	Plates over gold, nickel and silver	84.50
Nickel	PL-1006	5V-6V	Plates over copper. Apply copper flash using copper pen to non-copper surfaces.	39.50
Black Nickel	H- PL-1007	8V-10V	Same as nickel	44.50
Silver	H- PL-1008	5V-6V	Plates over any metallic surface except aluminum or chromium.	54.50
Chrome-Color	H- PL-1009	6V-8V	Plates over copper. Apply copper flash using copper pen to non-copper surfaces.	42.50
Copper	H- PL-1010	6V-8V	Plates over any metallic surface except aluminum or chromium.	36.50
Rhodium	H- PL-1011	8V-10V	Plates over nickel. Non-nickel surfaces should be first flashed with copper and then with nickel.	176.50
Tin	H- PL-1012	6V-8V	Plates over any metallic surface except aluminum or chromium.	39.50
Zinc	H- PL-1013	6V-8V	Plates over any metallic surface except aluminum or chromium.	37.50
Absorbent for Stainless Steel	H- PL-1014	10V-12V	For cleaning and activating stainless steel.	39.50
Connector Cables for use with your power supply.	H- PL-1001			22.50
Power Supply	H- PL-1000	110V-60HZ		379.50

Note: In the case of zinc die-castings or steel it is recommended that a copper flash be applied prior to the application of any other plating.

AIR TURBINE GRINDER*

- ENGRAVING, De-BURRING
- DIE DRESSING AND MORE

A precision tool with speeds to 340,000 rpm ...so fast, so precise, you can "sign your name" in hardened steel!...so efficient, it increases diamond tool life 20 times!

Speed and precision never before possible for engraving, scribing, drilling, creating radii and angles on form tools, dressing, dies, etc. are yours with Hunter. This lightweight easy-to-use grinder is ideal for electronic and miniature precision applications. With special diamond or carbide tools it easily works hardened steels, alloys, carbides, ferrites, glass ceramics and mineral-filled plastics.

The quick-change design feature allows cutting tips to be changed in seconds, no wrenches required. Only 40 lbs. of compressed air is required for maximum speed.

Complete Pro-Craft Turbine Tool outfit. Includes handpiece, control panel with pressure regulator and gauge, air filter, footpedal, air lines, repair wrench, lubricant, and instructions.

C49,771 $6.95 ea.

Replacement Parts

Pro-Craft Turbine Tool Handpiece with repair wrenches and instructions.

C49,772 $6.95 ea.

Pro-Craft Turbine Tool Lubricant, 6 oz. aerosol can.

C49,773 $6.95 ea.

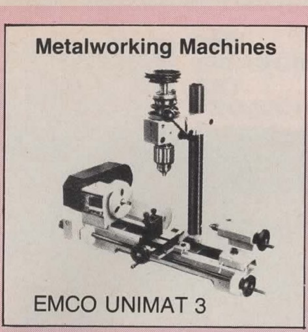
REQUIRES A MINIMUM OF 1.5 CFM OF AIR AT 40 PSI (1/4 HP COMPRESSOR)

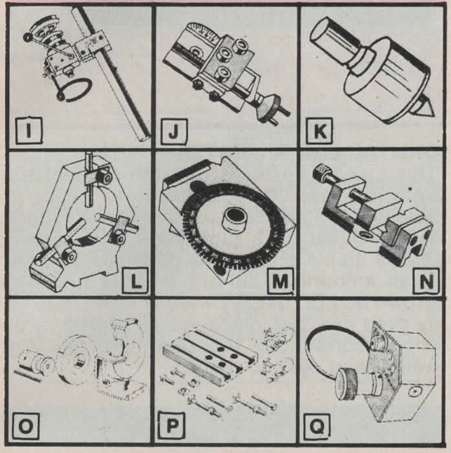
SUPER CARBIDE BURS

Shame size 1/16 designed for friction grip. Operating range 100,000 to 300,000 rpm for decorating and die cutting.

Large variety of other sizes and shapes available

Ball .0472 Dia.	**C49,774**	**$6.95 ea.**
Ball .0709 Dia.	**C49,775**	**$6.95 ea.**
Ball .0906 Dia.	**C49,776**	**$6.95 ea.**
Square End .0393	**C49,777**	**$6.95 ea.**
Square End .0551	**C49,778**	**$6.95 ea.**
Weel 0.472	**C49,779**	**$6.95 ea.**





UNIMAT 3

5 In 1 Precision Machine Shop-Lathe, Drill Mill, Grinder, Polisher

Whether you are a home or professional mechanic, a research worker or a technician, an industrial model maker or a hobbyist, the Unimat 3 offers you the versatility, performance and convenience of 5 basic shop machines in one compact, precision tool. With optional accessories you can turn, face, bore, grind, saw, mill, thread, drill, sand, buff — do many jobs on just one machine. You can change setups in seconds and cut virtually all metals, woods, and plastics.

The Basic Unimat 3 includes: T-ribbed lathe bed of high-grade cast iron for rigidity with ground V-guideway, headstock with motor, tailstock, longitudinal and cross slides, tool holder, face plate, lathe dog, 2 dead centers, 2 Allen keys, 1 double-ended spanner, tightening pin, and operating instructions.

Specifications:
Dist. between centers: 200mm
Center Height: 46mm
Swing capacity: 92mm
Cross Slide Travel: 52mm
Tailstock Barrel Dia. 18mm
Barrel Traverse: 23mm
Spindle Nose: M14x1
Spindle Bore: 10.2mm
8 Spindle Speeds ....130/200/350/560/920/1500/2450/4000 rpm.
Motor Type .... Magnet, 115V AC 60HZ, 1ph
Drive .... Constant Torque V-Belt
Weight; .... 16 lbs.
(H) Unimat 3 .... **C85,315 $499.50**

Unimat 3 Accessories:

(I) Vertical Drilling & Milling Unit. For drilling & milling at any angle up to 90°. Specs. col. dia. 28mm, max. dist. cross slide to vert. spindle 195mm, throat 64mm, drilling stroke 25mm, spindle nose M14x1. Simply attach motor from headstock to unit.	**C72,413**	**$178.50**
(J) Top Slide. Permits turning internal & external tapers up to 40mm long. Graduated scale for taper angle. Built-in toolholder.	**C61,185**	**$68.50**
(K) Live Center.	**C42,660**	**$27.50**
(L) 3-Point Steady Rest. For work on long & tubular pieces & facing long pieces.	**C61,181**	**$22.50**
(M) Indexing Attachment. Incl. division plate 24.	**C61,180**	**$65.60**
(N) Machine Vise. Max capacity 29mm. Mounts in T-slot of the cross slide.	**C61,182**	**$62.50**
(O) Tool Grinding Attachment. Complete with grinding wheel & cover. Mounts on lathe bed. Good for turning tools and twists drills.	**C61,178**	**$42.50**
(P) Milling Table. Incl. 2 clamping shoes.	**C61,179**	**$48.50**
(Q) Power Feed Gear. Unit permits automatic longitudinal feed of workpieces.	**C72,414**	**$59.50**
Division Plates Set. Incl. plates 30,36,40.	**C61,197**	**$28.50**
3 Jaw Chuck. Universal	**C61,183**	**$99.50**
4 Jaw Chuck. Has independently adjustable jaws.	**C61,184**	**$89.75**
¼" Drill Chuck. 3 jaw.	**C42,659**	**$27.50**
Tool Bit Set. Includes 6 assorted, ground tool bits.	**C42,661**	**$64.50**
Drilling & Milling Tool Set. Incl. one each; 2,3,4, & 5mm twist drills; 1,5mm dia. center drill; 90 countersink bit: 4mm dia. slot cutter.	**C61,198**	**$39.50**

O/min
200
330
560
950
1600
2400
BC1
BC2
BC3
AC1
AC2
AC3
emco compact 5

SPECIAL OFFER

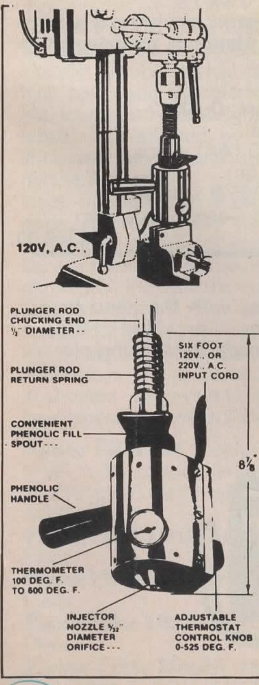
**Lathe with Vertical Milling and Drilling Attachment
3 Jaw Chuck, Drill Chuck and Machine Vice $1,849.50**

Compact 5 A Machining Center

for the advanced machinist, this is the logical upgrading in size, precision and perfection. Here is some specifications, Dist. between centers 350mm, Center height 65mm, Swing over bed 130mm, Swing over slide 80mm. A rugged extremely well made unit to last for a long long time, vertical drilling milling attachment with built-in Motor available also, the wonder of our generation, Computer Numerical Controlled, model, an unbelieveably economical solution to training or industrial applications to save many thousands $$ with the same precision and speed for short run productions.

Vertical milling and drilling attachment takes 82mm working radius, vertical slide 30mm.

Lathe (Specify Metric or Inch)	C49,334	**$1095.00**
Vertical Milling & Drilling Attachment (with Motor)	C49,335	**$495.00**
Universal Jaw Chuck	**C49,544**	**$195.50**
Independent Jaw Chuck	**C49,555**	**$127.50**
Drill Chuck	C49,338	**$29.50**
Machine Vice	C49,339	**$94.50**
Milling Table	C49,340	**$55.50**
Dividing Head (22 Poss Div.)	C49,341	**$82.50**
Fly Cutter	C49,342	**$26.50**
Top Slide Inch	C49,343	**$99.50**
Automatic Feed	C49,344	**$69.50**
Automatic Feed Attachment	C49,345	**$124.50**


120V, A.C.
PLUNGER ROD CHUCKING END ½" DIAMETER
PLUNGER ROD RETURN SPRING
CONVENIENT PHENOLIC FILL SPOUT
PHENOLIC HANDLE
THERMOMETER 100 DEG. F. TO 600 DEG. F.
INJECTOR NOZZLE ³⁄₃₂" DIAMETER ORIFICE
SIX FOOT 120V., OR 220V., A.C. INPUT CORD
8⅞"
ADJUSTABLE THERMOSTAT CONTROL KNOB 0-525 DEG. F.

MINI INJECTION MOLDER

For Prototype & Development Work

This compact, simple unit will turn any conventional drill press or vertical milling machine into a fully effective plastic injection molding machine.

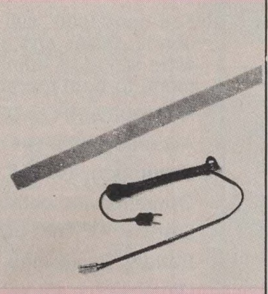
IDEAL FOR:
- Experimental Molding
- Short Runs
- Mold Check-Out
- Part Testing
- Color Checking
- Specifications

- Up to 1/3 oz. per shot
- Up to 100 shots per hour
- Molds most conventional thermoplastics
- Integral temperature control — 0-525°F.
- Uses simple tooling
- 120 volt, 900 watts
- Weight, approx. 3 lbs.

Includes injection molder, start-up mold, nozzle retainer ring, purging block, pouring container, two pound plastic molding pellets, and complete instructions.
H49,714 $846.00

Plastrip Heater for heating and bending of plastic sheets

Simple to use. No assembly necessary. Just lay strip heater on top of plastic, heat and bend to shape desired. Safe—designed to heat to a maximum of 280° F.



H49,713 24" Long: $45.50
H49,712 48" Long: $62.50

COMPACT 8

Same configuration and quality as the Compact 5 but with a larger capacity i.e. distance between centre 450mm. Centre height 150mm, swing over slide 118mm. Vertical milling attachment with vertical slide 100 x 160, vertical stroke 80mm. Takes most of the Compact 5 accessories. All this for a very reasonable price difference. Please write for details. See below.

WANT MORE FACTS ?

2-12 page full size color catalogues are available with up to date price list send $2.00 for each or write on your company's letterhead.

ADVANCED ELECTRONIC MEASURING AND RECORDING INSTRUMENTS

SQUIRREL METER/LOGGERS

Not only displays measurements but stores them and talks to your computer!
AS A METER, readings are taken from each input every second, and any input can be selected for display.
AS A LOGGER, readings are taken either at user-set intervals or when user-specified events occur. Readings are stored in the memory for later playback to a computer for plotting, analysis, etc. No interface units are required: the Squirrel can be connected directly to many different types of computer.
STANDARD INPUTS INCLUDE voltage, current, temperature humidity, pulsecount, event and digital. With a suitable transducer, almost any variable can be measured and recorded.

NEW FEATURES

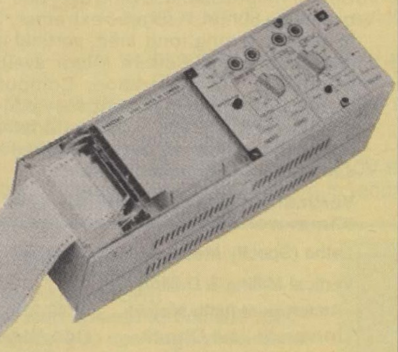
CHANNEL SELECTION allows the memory to be shared between the channels actually in use.
MASTER/SLAVE feature enables synchronous recording from large numbers of different types of sensor.
DELAYED START allows the user to set a delayed start time. 4 or 16 channel Squirrel or thermistor temperature inputs Optional 16K or 32K memory
TYPES: All Analogue, 4 or 16 Channel, Pulse Counting, Event/Digital.
GUARANTEE: 3 years
Complete descriptive literature with specifications and price list or quotation, on request.

Squirrel meter/logger
Grant
2.1 record 19.3°c

MICRO HI CORDER

An Electronic Tester That Records

In addition to being small and lightweight it employs an electrical recording method so that it requires no ink and is ready to use whenever and wherever required, with AC-DC Power supply built in.
At a rate of 32 times a second, the recording dotting speed is very high, so that even the slightest movement of the pen is faithfully recorded. In addition to this there are five paper speeds to select from, so that the range of uses is practically the same as that of a servo recorder.
With the many functions and ranges provided, it is possible to record most electric signals without using a transducer. Input resistance is high.
The recording paper is easy to change and suited to the keeping of records for long periods. Maintenance also is easy to carry out.



SPECIFICATIONS

DC, AC Voltage 0.1 0.2 0.5 1 2 5 10 20 50 100 200 500V

DC, AC Current 1 2 5 10 20 50 100mA

Max Voltage 1000V DC or peak AC/1 minute (0.1V range)

Max Current 1 A/250V fuse

Frequency Response for AC Ranges: 20Hz-40kHz (within - 3dB)

Recording width: 50mm arc recording

Chart Speed: 5.20cm/min. 2 10 5cm/hr

Frequency Response: 70% at 1Hz

Input Resistance: Voltage range: 1M 52 constant

Voltage Drop: 10mv constant

Accuracy: DC 2% f.s. AC 3% f.s.

Dimensions: 94H x 96W x 280Lmm (Body)

Weight Approx. 1.7 kg

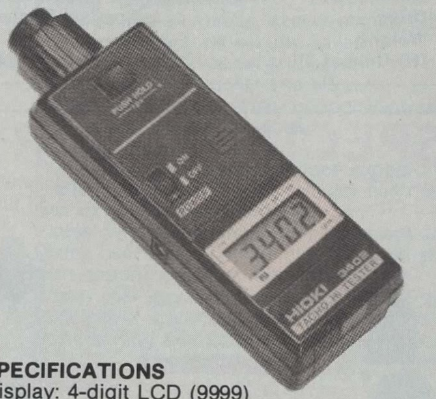
Optional Accessories

C49,751 Clamp-on Probe	**$213.50**
C49752 Chart Paper 1 pack 10 rolls	**$66.50**
C49,750	**$2149.00**

TACHO HI TESTER

Non-Contact Mode Digital Tachometer

Extremely wide range (30-99,990 rpm)
Superb accuracy +1 dgt
Recorder output
Also measures Revolutions Per Second
Tripod mounting
Direct contact operation also possible with accessory included.



SPECIFICATIONS

Display: 4-digit LCD (9999)
Sampling rate: 0.7 2s
Overrange display: The "1" in the MSD
Measurement range: rpm mode: 30.0 - 99.990 RPS mode 0.5 1600
Contact operation range: 30.0-20,000 rpm
Detection distance: 50-150mm
Operating temperature: 0-40° C
Output: (30 - 40,000 rpm) 3 - 4,000 mV 0.01 mV/rpm range (30 - 100,000 rpm): 0.3 - 1000 mV
Accuracy: +4% rdg +2mV
Power source: SUM-3 (Size AA) 4pcs.
Dimensions: 195L x 65W x 50Dmm
Accessories: Line cord, Reflective tape, carrying case.

C49,749	**$1274.50**

DIGITAL LUX HI TESTER

This Lux Hi Tester is capable of measuring from low level illuminance up to 2,000 1x A Selenium photo cell is used as the light detector, amplified in a high sensitivity amplifier that is stable enough to handle even a very small amount of current and the reading is shown on LED display which can be read easily even in a dark place. Visual sensitivity and angle correction, recorder terminal, light weight and easy to carry.

HIOKI 3422
DIGITAL LUX HI TESTER
10.00 lx
ZERO ADJ
OUT PUT
ON
OFF
2000
200
20
DC 6V
OUT PUT
HIOKI

SPECIFICATIONS

Display: 3 1/2 digit (LED)
Measuring Range: 20/200/2000 1x
Accuracy: +3% rdg + 0.5% f.s.
Reproducibility: +2% rdg.
Spectral Sensitivity: Matched to wavelength curve
Cosine Correction:
Operating Temperature: 0-40° C
Output: 200mV DC f.s.
Power Source: SUM-3 (AA) 4 pcs.
Light Sensor Lead: 1.5m
Dimensions: 168H x 165W x 48Dmm
Accessories: Carrying Case, Shade Cap

C49,748	**$1349.00**

DIGITAL HUMIDITY METER

Self-contained, self-powered, pre-calibrated humidity meters do away with the need for charts, tables and experienced interpretation of results. High accuracy is provided over a wide range of humidity. Response is almost instantaneous from the capacity sensing element, to both increases and decreases in humidity measurement.

Range: 0% RH to 97% RH

Accuracy: +2% RH

Resolution: 1% RH

Operating temperature range: 0°C to +40°C

Display: 12.7mm LCO

Battery: 9v alkaline

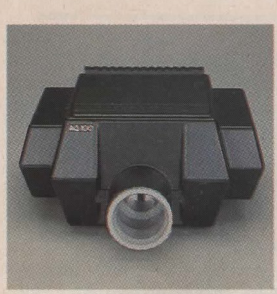
Dimensions: 4½ x 2 3/4 x 1½ inches

Weight: 240g

Low Battery warning

C49,753	**$659.50**

Hi-Tech Materials

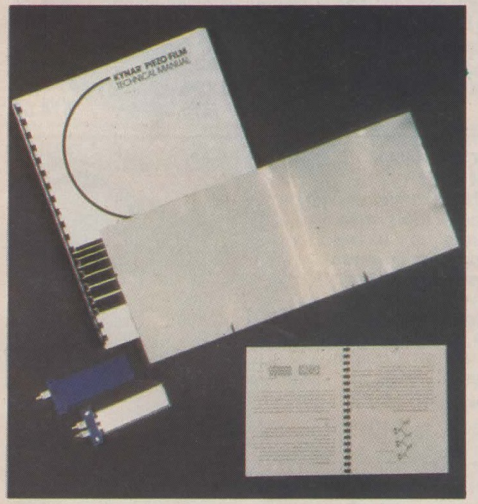


20X ENLARGING ART PROJECTOR

Compact opaque projector eliminates scaling and designing time. Projects vertically. 6½″ × 6½″ top-loading copy aperture projects flat images of photographs, lettering, logos and drawings for accurate reproduction. 400W illumination. f/4.8, 225mm lens. 60cfm cooling fan, 115V, 3.3 amps. Weighs 10 pounds.
E35,780 $342.50

SHUTTER RELEASES

Air powered camera releases with 6 ft. cords. Ideal for nature photography, self-portraits.
C35.548
$14.50 each
Hand Release



IT'S A PIECE OF PLASTIC WHICH GENERATES ELECTRICITY

Unique, flexible Kynar film from Pennwalt has high piezo and pyroelectric activity. Pliant, flexible, tough and lightweight, unlike transducer materials. Not affected by high humidity. Readily laminated into bimorph stacks, which increase the mechanical motion generated in cantilever devices. Specialty film is useful for keyboards, keypads, microphones, stereo headphones and speakers, biofeedback experiments, laser applications, as sensors for medical and industrial instrumentation. Pyroelectric output is useful in fire and intruder alarms and energy-control systems. Acoustic impedance is close to that of water, making it useful to be employed in hydrophones and sonobuoys. Kynar elements can produce motion in shutters, displays and motorless fans. Film can be exposed to temperatures of −40°.

Kynar Film Kit. Includes 4″ × 6″ piezo material; 4″ × ¼″ copper conductive strip; one piece 1″ × 2½″ piezo plastic coated with leads; instruction book. **E34,808 $134.50**

Piezo Film 10x20 cm. #9mm thickness. One Piece. **E34,809 $78.50**

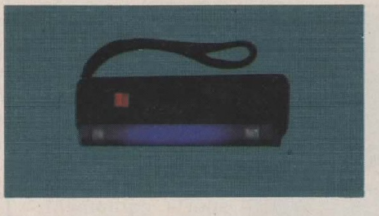
Piezo Film 10x24 cm. #28mm thickness. One Piece. **E34,810 $78.50**

Piezo Film 10x24 cm. #52mm thickness. One Piece. **E34,811 $157.50**

Piezo Film 10x24 cm. #110mm thickness. One Piece. **E34,812 $329.50**

PLASTICS SCRATCH REMOVER

Micro mesh abrasives restore surface finish to acrylics, hard plastics, epoxy and other finishes. Coarse to ultra-fine sheets. 10:1 efficiency factor over sandpaper. **E35,358 $42.95**

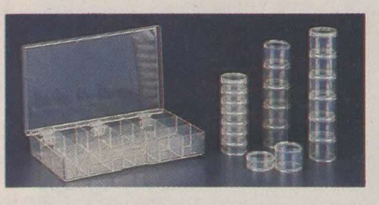


POCKET BLACKLIGHT

Mini blacklight fits in shirt pocket. 2¼″ × ¾″ × 7″. Ideal for rock hunters, bug collectors, etc. 3½ oz. Requires four "AA" batteries (not incl.). 4 watts.

Blacklight Pocket Lantern

49230 Long Wave $29.50
49231 Short Wave $33.50



STORAGE TUBES AND BOXES

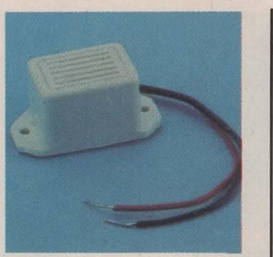
20-compartment clear acrylic tube has screw-together assembly. Cases are 1⅞″O.D.; 12 are 1⅜″ deep, 8 are 10/16″ deep. **E35,765 $13.95**
18-compartment storage box is 11″L × 6½″W × 1¾″ deep. Compartments are 2″L × 1¾″W × 1¾″ deep. **E35,764 $11.50**

INFRARED SENSOR STRIP

IR phosphor is a new infrared sensor material which glows bright orange in the presence of invisible infrared light. Useful for targeting and measuring dispersal of IR lasers. Glows brighter and maintains illumination longer than first generation materials. Laminated card is 2½″×4″; phosphor area 2″×2″. Radiation sensitive range 700 to 1300nm. **D35,887 $34.50**

Luminescent Experimenter's Kit. Contains one infrared sensor strip, one bottle (1 oz.) of phosphorescent coating, four phosphorescent self-stick strips. Material absorbs fluorescent and/or sun light. **D35,886 $59.50**

Photoluminescent Paint. 1 oz. jar. **D35,888 $19.50**

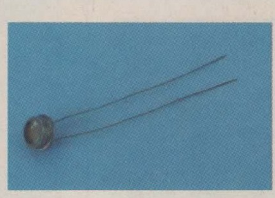


SOLID STATE 12V DC BUZZER

70dB sound. 15mA ±2 standard current. 400Hz frequency. No RF noise. ⅞″ × ⅝″ × ⅝″. For automatic warning indicators.
C35,378 $4.95

HANDY PUMP

As a liquid pump, it replaces a siphon. As an air pump, it will inflate tires, sports equipment, etc. Fine mesh screen at end of each 5′ hose traps foreign particles.
E35,401 $49.50



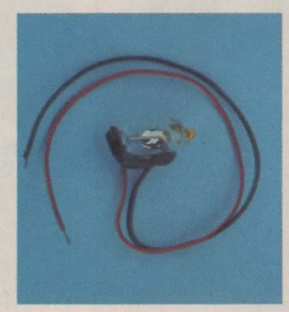
2 PHOTOCELLS

Photo resistive, cadmium sulfide type. 12k ohm min. @ 0.1 ft. candle; 250 ohm max. @ 100 ft. candle. 75mW max. power dissipation. 3/10″ dia. pop in surface mount. 2″ leads.
E35,375A $5.50

SoLiCo
125V 1/3W
SoLiCo
125V 1/3W

INDICATOR LIGHTS

Industrial grade 125V indicator lights with 1/16″ lip on face. Tapered bodies push fit into 5/16″ diameter panel holes. 1½″ long. ¼″ diameter. ⅓W rated. 4″ leads. Pkg. of 5.
$10.95 per package.
Amber E35,399A
Green E35,400A



GLASS CARTRIDGE MERCURY SWITCH

For alarm applications or uses where contacts must be sealed from the atmosphere. 1″ long glass cartridge, approximately ⅜″ in diameter. 7″ long twin wire leads. New. Surplus.

Mercury Switch
E34,803 $8.95
E34,803A 2 For $16.50

THE EXTRACTOR

MINIATURE VACUUM PICK-UP PUMP

Double-chamber vacuum pump delivers 750 milibars of suction. Originally designed as a venom extractor. We found it a useful vacuum pick-up device. Pump measures 4½″L × 1″ dia. Kit includes four suction cups, pump, antiseptic, razor.
E34,869 $29.50

TELESCOPING MAGNETIC PICK-UP

Carry this handy tool like a pen. Telescopes to 24 inches to retrieve unreachable metal parts with the strong permanent alnico magnet on the tip. Also useful as a lecture pointer. Only 4¾″ long when collapsed.
C35,789 $9.50

YOUR COMPLETE INDEX
IS ON PAGE 111

1400W HEAT GUN...THE TORCH WITHOUT AN OPEN FLAME

Thermostat controlled hot air gun delivers from 140W to 1400W, 200-1160 F. Remove paint and adhesives, thaw frozen pipes, strip wallpaper, remove carpet and floor tiles, solder joints without flame, heat shrink plastic film, shape plastics, defrost freezers. Electronic heat control switch. 7.7″ × 11″ × 3.2″. **E35,719** **$174.50**

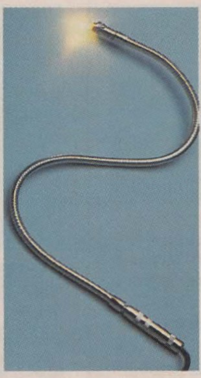
FLEXIBLE SCREWDRIVER

Now you can finally get to that loose screw in the corner of your bookshelf. The flexible arm of our specially designed screwdriver gives you the leverage and angling ability to turn screws in even the tightest places. The ratchet handle lets you work continuously without withdrawing the tool. Set includes four bits, one adaptor and three sockets.
C49,799 **$22.50**

0-6 MICROMETER SET

English-reading micrometer set includes 6 individual micrometers, 0-1″, 1-2″, 2-3″, 3-4″, 4-5″, 5-6″. Each micrometer features spindle lock and ratchet, carbide faces and graduations in 0.0001″. Includes four standards (1″, 2″, 3″, 4″) and wooden storage case with handle. Case measures 8″H × 7″W × 12″L. Made in China.
E35,770 **$425.50**

YOUR COMPLETE INDEX IS ON PAGE 111

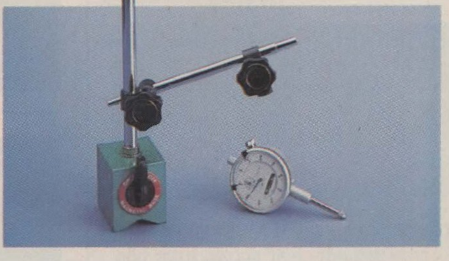


FLEXIBLE LAMP PROBES INTO RESTRICTED AREAS

Probe-Lite delivers 1,000 ft. candle intensity. Bulb is mounted on 18″ flexible arm which fits a 9/16″ diameter opening. Transformer is located at end of 10 ft cord. 110V AC. Draws 4W of power. Hand-held or curl end to form a stand.
E35,809 **$94.50**

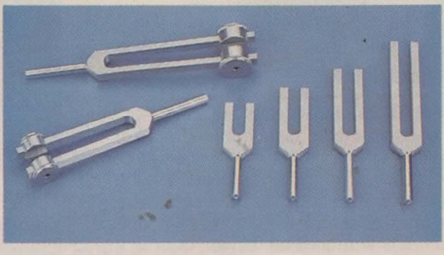
BRAND IT

Monogram just about anything in seconds with our new brander. Simply heat the easily interchangeable letters with the built-in butane lighters and you can mark your sports equipment, tools, luggage or anything else you desire. The letters and easy to follow instructions are included.
C49,657 **$22.50**



MAGNETIC BASE WITH ADJUSTABLE ARM

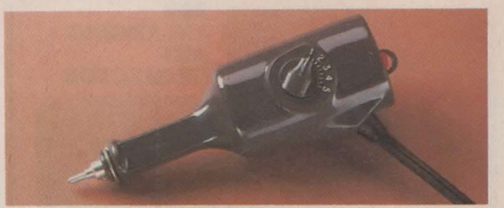
Powerful 75 pound pull magnetic base has center "V" construction to grip round or flat surfaces. Easy on/off lever release. Base is 2⅛″H × 2″W × 2⅜″L. Overall height is 9½″, 7″ post and 7″ arm. Universal clamp has ¼″ threaded mount to accept dial indicators. **E35,769** **$69.50**
Saginomiya Dial Indicator. 2″ dia. dial, graduated in 0.001″ increments. Range 0.001″ to 1″. Made in Japan. **E35,766** **$69.50**
Set of Both Above **E35,768** **$126.50**



5-PIECE ALUMINUM ALLOY TUNING FORKS

Designed to professional medical specifications. Non-rusting, non-magnetic, non-tarnishing. Set includes one each: C-128, C-256, C-512, C-1024, C-2048 frequencies, plus a padded, fitted storage case. Each fork is clearly marked. Individual tuning forks sold separately please inquire.
C35,749B **$129.95**

INDIVIDUAL TUNING FORKS SOLD SEPARATELY, PLEASE INQUIRE



ENGRAVE YOUR MARK

Electric engraver permanently marks any surface, from hardened steel to glass, providing easy and foolproof security identification. As a creative tool, use engraver to decorate glass, ceramics, more. As easy as using a pencil. 7,200 strokes-per-minute high speed motor. Long wearing carbide engraving point.
C35,689 **$39.50**

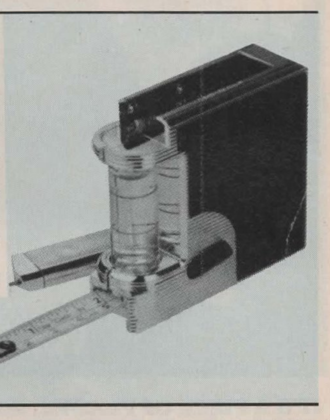
TEKNA MONO-LITH

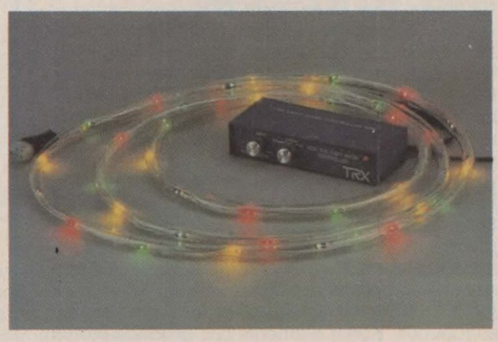
TEKNA MONO-LITH KEYRING

Tekna Mono-Lith light with screw-lock keyring. Energy dense lithium battery provides a bright beam of light. Battery has a temperature operating range of −5F to 120F and 10-year shelf life. Light has O ring seal and is waterproof to 2,000 feet. Black. 3″ long flashlight. **E35,260** **$34.50**
Extra Lithium Power Cell (Pkg. of 2) **E35,808A** **$14.50**

FOUR-WAY RULER

This handy, compact tool measures in inches and centimeters up to ten feet is a level, scribe (for making circles up to 20 feet across, and has a built-in pen! 3" high.
C49,658 **$19.50**





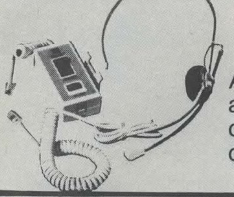
12 FOOT LONG LIGHT SHOW

Dramatic attention-getter for indoor/outdoor displays or a unique party decoration. Each 12 ft. clear plastic flexible tube encases 44 tiny, brightly colored bulbs and connects with modular plug to control box. Controller allows you to select variety of patterns... create your own show.
Controller Only **E35,280** **$57.50**
12′ Light Strand **E35,279** **$43.50**

ORDER BY PHONE 416-787-4581

TELEPHONE ADD-ON ACCESSORIES

Telephones are next to a living thing in a household. Despite the many improvements on new sets, there are equally many accessories to make your telephone more efficient, therefore will make your life more comfortable.



Hands-Free Telephone Headset

Amplifier box has volume control and attaches easily to most modular hand-set cords. Adjustable mike boom and clothes clip. 6-ft. cord.

C49,727 $48.50

Telephone Hearing Booster

Amplifies caller's voice; ideal for the hearing-impaired. Adjustable volume control. Designed for fully-modular telephones. Snaps into place between handset and base, no tools required. Comes with Velcro mounting strips.

C49,718 $27.50

Standard Telephone Pick-Up

For recording or amplifying both sides of a telephone conversation. No wiring or installation; just connect pickup to phone with suction cup and plug cord into recorder or amplifier. Miniature (3.5 mm) phone plug fits majority of recorders.

C49,721 $9.50

Two-Line Adaptor

Converts a two-line system into two single line outlets.

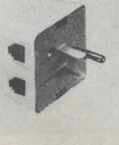
C49,726 $7.50

Telephone Amplifier for Group Listening

Ideal for the office and group-listening at home. Leaves your hands free for writing. No "hook up", just attach suction cup pickup to outside of phone.

C49,723 $25.50

Telephone Lightning Arrestor



Prevents your answering machines, cordless phones, etc., that use AC power from being damaged by lightning. This arrestor can stand up to 3,000 volts AC. Easy installation; simply plug into an AC wall receptacle, and plug your modular plug on your equipment through this arrestor to the wall jack.

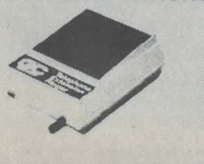
C49,715 $48.50

Hold-Mute Switch

Connects between handset and telephone. Device is used to put telephone caller on "hold" without disconnection.

C49,720 $13.95

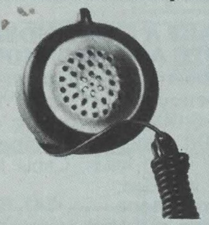
Electronic Extension Ringer



This weatherproof ringer is ideal for outdoors. Sound can be heard for great distances. Volume control, built-in modular jack.

C49,717 $41.50

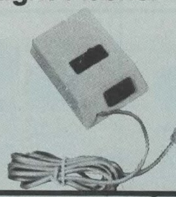
Deluxe Telephone Pick-Up



Induction coil principle assures clear voice reproduction and minimum noise pickup. Records or amplifies both sides of the telephone conversation. No installation; just slip pickup on phone earpiece and plug cord into recorder or amplifier. Miniature (3.5 mm) phone plug fits majority of recorders.

C49,722 $13.95

Light Flasher



Simultaneously flashes light when telephone rings. Unit plugs into AC outlet and modular phone jack, while lamp plugs into flasher. For incandescent bulbs up to 300 watts. Perfect for noisy rooms and the hearing impaired.

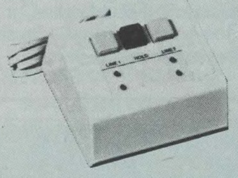
C49,724 $37.50

Telephone Hold Switch

Provides hold function to modular telephones, LED indicator, built-in bell silencer switch.

C49,719 $44.50

Two-Line Switch



Adapts any single line system to a two-line system to permit incoming calls on either line to be answered on a single line telephone. Pushbutton "hold" switch. Separate hold and ring indicator lights for either line. Allows choice of lines for answering machine, recording devices, cordless phones, and other accessories.

C49,725 $47.50

Telephone Bell Silencer

7-foot cord, on/off switch controls ringer. Ideal for library, nursery, bedroom etc.

C49,716 $17.50

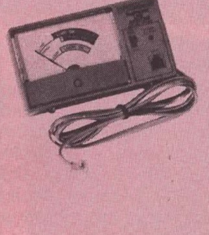
TELEPHONE TEST EQUIPMENT

Tele-Check Modular Line Tester

Analyzes modular phone line problems. Tester inserts into modular jack or in receptacle which holds line wire in network interface panel. Provides visual indication of the type and location of the phone line problem. Eliminates costly unneeded telephone service calls.

C49,728 $14.50

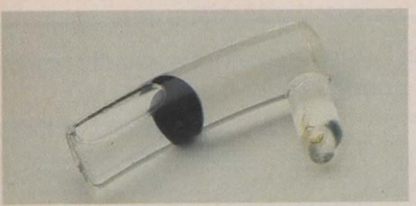
Telephone Line Analyzer



Tests line functions that affect telephone operation. Modular plug from analyzer plugs into wall jack. Complete instructions included to test telephone line and ring voltage levels, and cord as well. Also analyzes condition of telephone line from central telephone office to jack inside home. Verifies telephone line polarity that can affect polarity sensitive telephones. No external power required — needs no batteries.

C49,729 $42.50

Miscellaneous Tools



SURPLUS TURN AND BANK INCLINOMETER LEVEL

Originally manufactured for the U.S. Air Force, this inclinometer was designed to indicate when an airplane was turning and banking. Water-filled glass case with black teflon ball. 2¼" long. ½" in diameter. New. Not calibrated.

Inclinometer E60,211 $18.50

WIRE THAT COMES TO LIFE AS YOU SHAPE, BEND AND MOLD IT

Non-corrosive, pliable wire can be used to make unique maquettes, form the skeleton of another art form or be the backing for thousands of hobby projects. Can be reused several times before breaking. Sculpture wire comes in three widths.

1/16" 32 foot roll E34,794 $7.50
1/8" 20 foot roll E34,795 $10.95
1/4" 10 foot roll E34,796 $16.50

MAKE REPAIRS FAST WITH HEAT SHRINK TAPE

Self-sealing tape withstands severe temperature variations. Repair pipes or hoses. It shrinks about 30% lengthwise when heated to 275°F. Set contains two 1" x 10' rolls.

Tape (set of 2) E34,531 $7.95
3 or more sets E34,531A 2 for $14.50

COLD SHRINK REPAIR TAPE

Activated by stretching (up to 3 times its length), chemically treated cold shrink tape provides an emergency seal or repair even under hostile weather conditions. Cold and heat resistant. Conforms to any shape. Ready in 15 minutes. Cures in 24 hours. Long shelf life. Adheres only to itself. Two 1" wide by 10' long rolls. E34,529 $24.50

MAKE A FISH FINDER WITH A HYDROPHONE

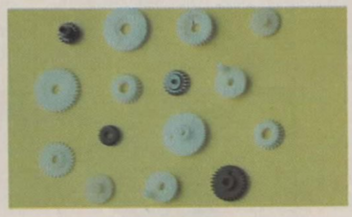
Rubber cased hydrophone has a frequency response of between 10-6,000Hz. Working depth of 300ft. Operating temperature to 35° C. 8" leads. Cable to surface not included.

Hydrophone E41,759 $23.50
String of 2 Hydrophones E41,759A $41.50

CERAMIC ADHESIVE BOND LASTS AND LASTS

Bond ceramics to ceramics, metals, glass, plastics and more. High temperature resistance, dielectric strength, mechanical properties. 2500° service temperature; 3,500psi compressive strength; 100 volts/mil. Four bottles of powder. One bottle of liquid adhesive.

Ceramic Adhesive Kit
E42,708 $74.50



ASSORTED GEARS FOR A WIDE VARIETY OF NEEDS

Here is a fine set of quality nylon, brass and steel spur gears that range in size from 5⁄16" to 1¼" diameter. Inches 24, 32 and 48 pitch. E60,352 $13.50

A FIRE COMPANY IN A CAN

Hand-held Firejet extinguisher contains 100% Halon to snuff out fires in those first critical seconds before they spread. Disposable unit is 8½" high. Stores easily. Mighty enough to put out a 6 foot gasoline fire. Non-staining, non-corrosive, odorless. U/L listed.

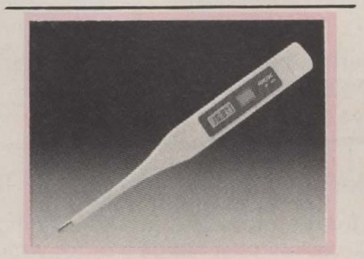
Firejet E33,158 $45.50

Medical Optics

CHECK OUT INFLAMED EARS AND THROATS YOURSELF WITH THIS LOW-COST OTOSCOPE SET

Quality-made and budget-priced otoscope set lets you be the judge. Decide for yourself if a doctor's help is needed for yourself or your family. Includes an otoscope fairlight with three aural speculae, a nasal speculum and a plastic battery handle. Powerful magnification lens permits you to detect redness or swelling. 6¾" x 1½" diameter scope. Set stores in plastic pouch.

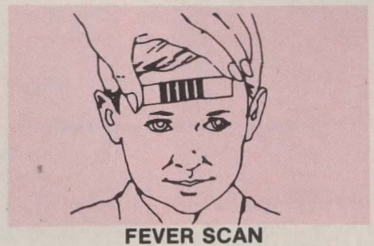
Otoscope Set
C31,252 $75.50
ON SALE $59.50



DIGITAL MINIATURE MEDICAL THERMOMETER

• Measuring range 32° C — 43° • Resultion O.1° C • Accuracy 0.2° CC • Highest temperature hold function • Single 1.5V battery • Alternate on-off switch with automatic power off function (-10 minutes) • 5½" long, 5/8" wide, ¼" thick.

E49,563 $14.50



FEVER SCAN

This is a strip encapsulated liquid crystals (LC) about ¾" wide, 3½" long, sensitive to different temperatures. You place this strip to the forehead of a sick person and you observe his temperature fluctuating by reading the numbers. The sick person can see his temperature by looking on a mirror.

C49,798 $3.50 each
C49,798A 2 for $6.50

BUDGET PRICED OROTOSCOPE PAYS FOR ITSELF

Ear scope allows inspection of ears for detection of foreign objects. Throat scope permits inspection of the mouth and upper throat for soreness or inflammation. Features a special high-intensity penlight with a narrow focus beam. 10½" x ½" diameter. Plastic and metal. Requires two "AA" batteries (included).

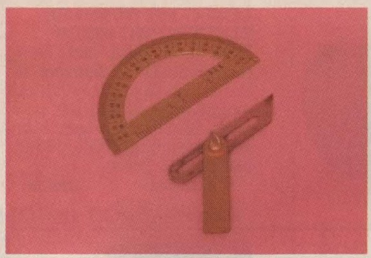
C31,618 $46.50

HAVE YOU EVER SEEN INSIDE OF YOUR EYE?

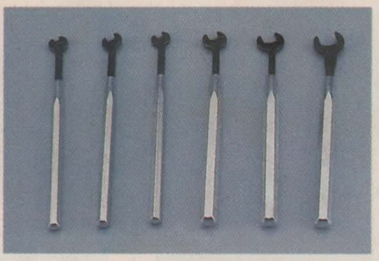
Eyescope is an optical device for looking inside your own eye. Eyescope is a specially designed diffuser incorporating a parabolic mirror & lens light. Beige.

Eyescope
E33,538 $52.50

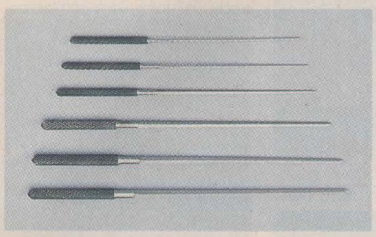
ORDER BY PHONE
416-787-4581
OR BY TELEX:
06-969864



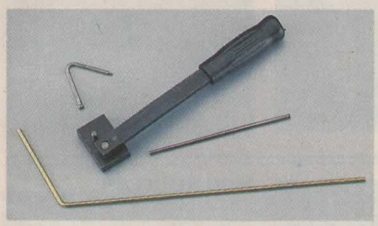
MINI MITRE AND PROTRACTOR
Scaled small for small projects. This angle setter for miniatures is just 2⅛″ long. Brass handle. Adjustable steel blade. Gives you the precision angles you want on projects that show your dedication for detail.
E35,717 **$25.50**



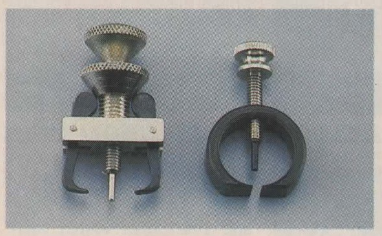
WRENCHES SCALED FOR HOBBYISTS
Open end, six piece wrench set is ideal for model makers, electronic hobbyists, metal and miniatures craftsmen. Assemble or repair with ease. Includes 3⁄32″, ⅛″, 5⁄32″, 3⁄16″, ¼″ and 5⁄16″ sizes. Black oxide jaws set in aluminum hex handles. **C35,693** **$21.50**



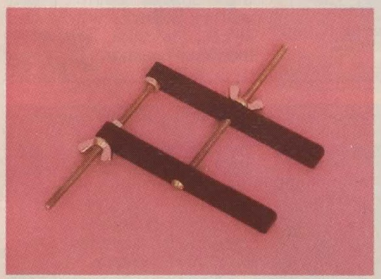
REAMERS FINISH THE JOB
Handy tools remove the burrs and rough edges from drill holes. Use this six piece set for enlarging, shaping, cleaning metal, wood, plastic or fiber. Fits drill gauge sizes 42 to 73. Easy grip handles. Packed in vinyl storage pouch.
Six Reamers **C35,688** **$20.50**



WIRE BENDERS, SHAPERS
Mighty Bender—For ⅛″, 5⁄32″, 3⁄16″, 7⁄32″ and ¼″ diameter steel music wire and square and rectangular shaped metal.
E35,750 **$45.50**
Mini Bender—For 1⁄16″, 5⁄64″, 3⁄32″ and ⅛″ diameter steel music wire and square and rectangular shaped metal.
E35,751 **$18.50**

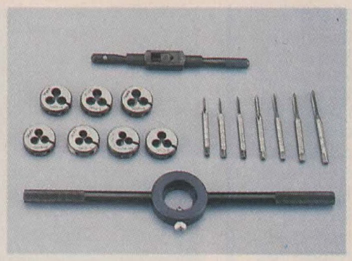


MINIATURE WHEEL/ GEAR PULLERS
Adjustable Jaws Pulley—1¾″ high. 7⁄16″ diameter post. 1″ wide jaws frame. 7⁄16″ maximum jaws opening.
C35,694 **$19.50**
Stationary Jaws Pulley—1¼″ high. 7⁄16″ diameter post. 1″ wide jaws frame. ⅛″ stationary opening.
C35,695 **$10.95**

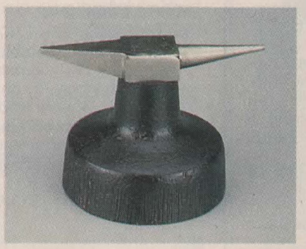


2 CLAMP VISES
Rigid plastic clamp vises withstand abuse and provide needed holding power yet are light enough to be used on most delicate miniatures. Versatile clamp can be used either as a vise or will hold parts in the middle. Opens to 3″. Package of four clamp vises. **E35,718A** **$12.50**

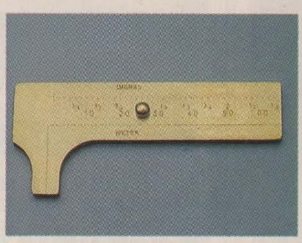
A FOOT SWITCH AT A PRICE YOU'LL CLAP AT... $44.50
Formed steel casing with skid-proof base pad and actuating treadle. Designed to activate on light pressure, eliminating operator fatigue. Black finish. SPST Wired N.O. circuit. 7 amps, 125 VAC. 1/6 H.P., 125 VAC. 3½″ × 2⅜″ × 1″. Weighs 7 ounces. UL listed. Supplied with 6 foot, 18/3 cord and three prong series plug, green lead grounded.
Foot Switch **E35,283** **$44.50**



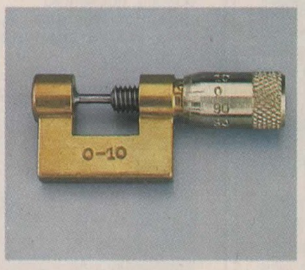
MINIATURE SCALE 16-PIECE TAP, DIE SET
Machine shop quality tap and die set scaled for miniature use. Tungsten steel taps. Adjustable dies. Includes seven taps, seven dies, tap and die wrenches. Sizes 00-90, 0-80, 1-72, 2-56, 3-48, 4-40, 6-32. Packed in molded storage case.
E35,791 **$176.50**



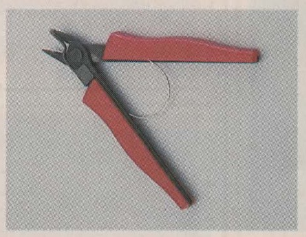
HORN ANVIL
For flattening and shaping. Has polished round and flat horns. Measures 3⅞″ across the horns. Stands 2⅝″. Circular metal base. Weighs about one pound. Made of case-hardened steel.
Horn Anvil **C35,692** **$71.50**



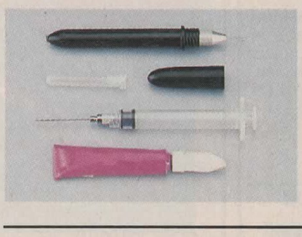
POCKET CALIPER SLIDING GAUGE
Just 3 1⁄10″ long and about 1½″ wide. Sliding gauge determines measurements to 2¼″ or 60mm. Graduations are by 1/16th inch or 1.0mm. Quality crafted of solid brass for durability.
Sliding Gauge
C35,690 **$29.50**



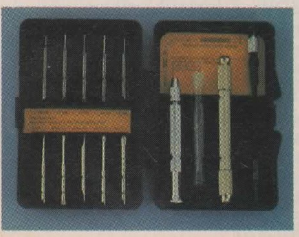
MINI MICROMETER
Swiss-made precision micrometer measures from 0 to 10mm in 0.01mm increments. Just 2″ long, with small measuring faces. Easy adjust barrel. For measuring small scale optics, precision parts.
C35,691 **$35.50**



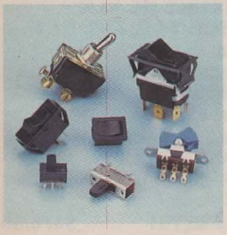
CLIP AND GRIP CUTTER
Semi-flush jaws trim copper component leads up to 0.047″ diameter (18 gauge). Retaining device holds clipped ends, preventing them from flying about or remaining in circuitry. Forged alloy steel. Induction hardened edges. 4½″ long. Gentle spring return for low hand fatigue. Not for use with steel wire.
C35,741 **$18.50**



PRECISION OILERS
Oiler-Applicator With Lube—Hypodermic-type 0.023″ hole dia. 2cc capacity. 4¼″ long. W/tube silicon lube. **E35,687** **$9.25**
Auto Oiler—Oil is supplied when needle is depressed. Glass oil reservoir. Plastic case. 0.011″ hole dia.
E35,686 **$22.95**

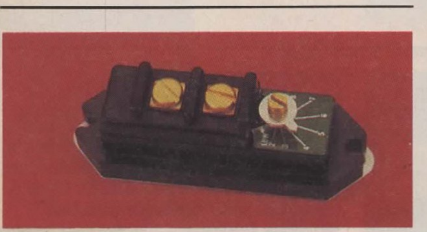


MINI TAP/DRILL/DRIVER
Set includes 9 tap drills, 5 taps, 3 flat and 2 Phillips screwdriver blades, chuck handle for taps and screwdriver blades, double end pin vise and flexible shaft extender. Taps: #00-90, 0-80, 1-72, 2-56, 2-64. Drills: 2 each #60, #56, #53, #50; one #48. 1⁄16″, 5⁄64″, 9⁄64″ flat blades. 0 to 0.081″ capacity end pin vise. **E35,502** **$58.50**



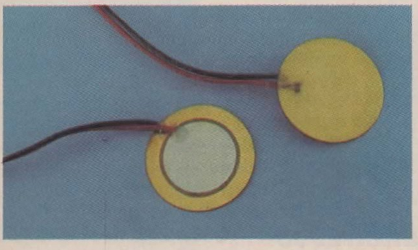
SWITCH KIT
10 in all. Assortment of dip, toggle, slide & sensitive switches in miniature and standard sizes. New condition.
E35,762A
$14.50

HOBBY MOTOR ASSORTMENT
8 assorted 6 and 12V, DC, and 115V, AC, slow-speed timing and display motors. Tinker with an experiment, power a display, create special effects, etc.
E35,763A **$19.50**

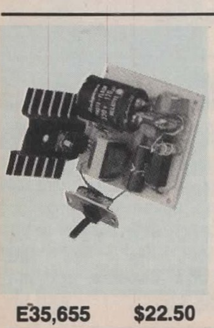


ADJUSTABLE THERMOSTATIC SWITCH
Switch opens on temperature rise. 110° to 260°F ±5° adjustment range. Contacts remain open until temperature drops about 25°. 8Amps @ 120VAC. 4A @ 230VAC. Control thermostat where preset temperature is desired. Ideal overheat control thermostat. Surface mount. Screw terminal connectors included. 1" × 1" × 3⅛". Wt: 1 oz. Surplus. New condition. **E35,284** **$13.50**

EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4
(416) 787-4581



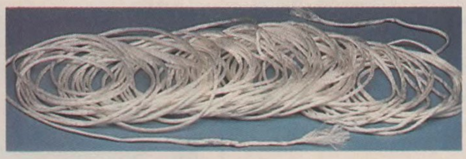
PIEZO DISC
Transducer which converts pressure to an electrical signal and vice versa. Thin metal disc just over 1" in diameter. Twin 8" leads. Excellent hobby project component, piezo illustrator, beeper speaker, etc. Package of 2 discs. **E35,200A** **$4.95**



BUILD YOUR OWN MINI-STROBE KIT
Kit includes printed circuit board 2½" x 2¼", neon bulb and flash tube, switch, heat sink, transformer, transistors, resistors, diodes and complete instructions. Takes 2 "C" or "D" batteries. Soldering iron and small screw driver required.
E35,655 **$22.50**

MINIATURE 2¼" SPEAKERS
¾" thick; 2¼" diameter. Powered by 1¼" diameter ceramic magnet, 8 ohm rating. Twin 3" wire leads. Repair radios, tape players, etc. Ideal for science projects, speakers, alarms.
E35,642 **$13.50**

ULTRA MINIATURE 1" SPEAKERS
Just 1" dia. and ⅝" tall. 8ohm voice coil. 0.1W. ½" ceramic magnet. 2 contact solder points for lead wires. Build your own headphones. For experimenters and science projects.
E35,654 **$11.50**

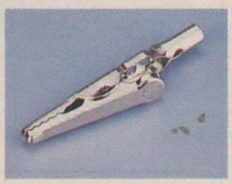


MULTI-COLORED 600 FT. SPOOLS OF PARACHUTE CORD
Bargain-priced 300 ft. spools of heavy-duty nylon parachute cord. Costs just 2½ cents per foot. ⅛" diameter. Rainbow of colors. Scores of uses—camping, sports, boating, household. **$16.95 per spool.**

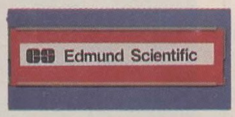
White E35,705A Bright Red E35,707A
Black E35,706 Bright Blue E35,708A

GIANT ROLL OF FOAM TAPE
Over 100 ft. of 3" wide x 1/16" thick foam tape with one side adhesive. Peel-off backing protects sticky side and allows for easy application. Ideal base cushion for instruments or cabinets. Line protective cases, cover orthopedic aids, affix to handles, many more uses.
E35,738A **$13.75**

COPPER SHEETING
12" × 18" copper sheet, 0.005" thick. Originally for electronic circuit boards. One sheet.
E35,652 **$5.95**



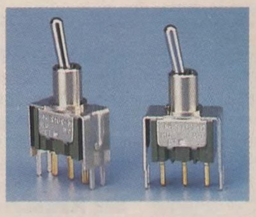
ALLIGATOR CLIPS
Endless hobby and electrical uses. Solderless. About 2" long. 3/16" dia. wire opening. Crimp wire in stud or attach with screw. Package of 10 alligator clips.
E35,790A **$5.95**



MAGNETIC SIGN HOLDERS
Sign boards hold a 3" × 12" sign to metal door or surface. Metal frame. Two sure-grip ¾" × 2½" ceramic magnets. Protective plastic cover. For truck door signs, displays, offices. Package of two sign boards. **E35,641A** **$21.50**

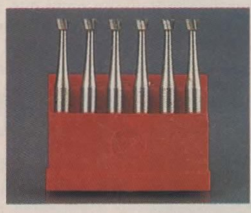
LOW COST SURPLUS ELECTRONIC SIREN
Extra loud Mura siren horn runs on 6-12V. 5" diameter. 6" long. 5" tall. Pre-drilled mounting base. Twin 10" wire leads. Black finish. Plastic horn with metal base. New. Industrial surplus. 8ohm.
E35,660 **$29.50**

KEYSWITCHES
On/off switch is keyed. Control access and usage of expensive or dangerous equipment. 1¼" long. Fits ¾" hole. 2 keys per switch. Ideal for 12V or less applications. New surplus.
E35,658A **$12.50**



MINI-TOGGLES
⅝" × ¼" box, ¼" diameter neck, ⅜" long stick miniature toggle switches are aircraft industry surplus. Single pole, double throw, rated 28V max., 0.4VA max. New. For lighting controls, electronics. Package of 2.
E35,649A **$3.95**

HIGH SPEED MABUCHI MOTOR
Miniature 12V DC motor measures 1¼" dia. × 1"W. 1/16" dia. × 7/16"L shaft. 5900 RPM. Reversible, 1.1 oz./in. stall torque; 780 ma stall current. Draws 11ma at 6V, 20ma at 12V (no load). Ideal for hobby, solar projects.
E35,651A **$11.95**



MINI-ROUTERS
These tiny ⅞" long dental burrs make ideal mini router blades for your Dremel or similar miniature drill. For detailing wood, plastic, brass, aluminum. 3/32" shank. Pack-

E35,647A **$8.25**

BALL BEARING BUY
Each pack contains 2 black Delrin housings, 1 19/32" dia. and 1 7/32" long. Within each are 2 bearings and a 3/16" thick spacer. Bearings are white Delrin, 1⅜"O.D.; ⅝"I.D.; 7/16" thick. Total of 4 individual bearings.
E35,737 **$12.50**

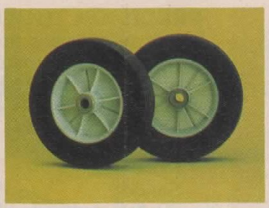
SOLENOID VALVE
12VDC valve is handy for low volume, low pressure air or water uses. Designed for automotive applications. Works with gravity flows and automatic level controls.
E42,533A **$6.95**

BRASS COATED WIRE FOR HOBBYISTS
Our bargain-priced 50 foot spool of braided brass-coated steel wire has hundreds of hobby applications, from jewelry to model building. Approx. 0.048" diameter, very flexible and very strong.
E35,648 **$5.25**

LIQUID CONTAINERS

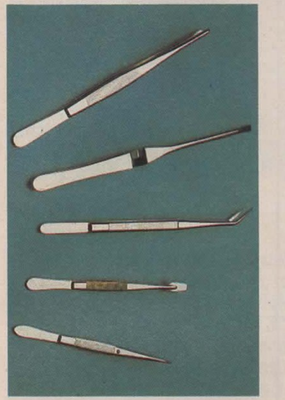
Aluminum one-piece construction. Secure screw-on top. Swiss imports.

Sm. (10 oz.)	E34,976	$13.75
Med. (20 oz.)	E34,977	$15.95
Lrg. (32 oz.)	E34,978	$18.50
Replacement cap w/gasket	E34,979	$4.50
Cap w/drain	E34,980	$4.50
Cap w/pour spout	E34,981	$6.55



HEAVY DUTY WHEELS FOR HEAVY DUTY LOADS

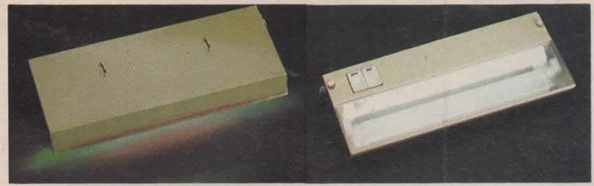
Semi-pneumatic wheel is 7¾″ in diameter and 1⅝″ wide. Self-lubricating steel bushing accommodates 9/16″ shaft. Black. Seven tread design. Repair damaged mail carts, hand trucks, etc. **Package of two wheels.** E34,961 $14.95



A TWEEZER FOR EVERY NEED

All-purpose, five piece tweezer set will handle the needs of hobbyists, technicians, those engaged in soldering applications and more. Tweezers are drop forged and nickel plated to resist rust. Set includes a 4¾″ stamp tweezer; a 4½″ sharp pointed tweezer with serrations on handles and tips; a 6″ retrieving tweezer; a 6″ curved tweezer for positioning and sorting small parts; and a 6½″ self-closing tweezer for use in soldering applications.

Tweezer Set C34,831 $19.50



MORE LIGHT, LESS WATTS, LESS COST

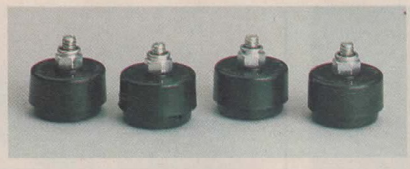
Big'r Brite utility lamp has an eight watt fixture that gives the lighting equivalent to one 75 watt incandescent bulb. A unique aluminized parabolic reflector redirects light that other fixtures waste. Produces up to 60% more usable light than a standard 15 watt fluorescent fixture. Easy to clean fixture is coated with a baked enamel finish. Easy to install. Template is included. Polarized plug. Beige fixture. Two sizes.

12″ long	E34,867	$34.50
24″ long	E34,868	$57.50

ALL PURPOSE STOW-AWAY GEAR HAMMOCK

This multi-purpose, all-nylon gear bag is designed like a hammock. There are thousands of uses for this 48″ long by 16″ deep sack. Stow gear on boats or in your garage. Provides safe, off the ground storage of camping supplies. Place a six-pack of your favorite soda or beer inside and cool it in a stream while fishing. Great car, van or truck carry-all. At home it is a shoe and clothes bag. Folds to fit into car or truck glove box. Rugged. Washable. Tested to hold 80 pounds. Blue nylon.

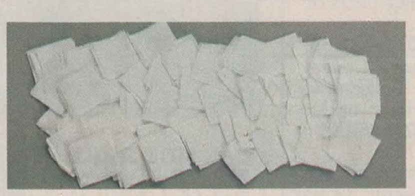
Stow Away Hammock	C34,874	$4.95 ea.
Two or more Hammocks	C34,874A	Two for $8.95



FEET TO KEEP TABLES, CABINETS, ETC. LEVEL

Superlevel feet self-adjust for as much as ½″ variance in height to keep cabinets, tables, etc. level. Levels apply pressure from the top down using the object's own weight. Rust-proof nylon body won't mar floors. Black base with standard ¼″-20 tempered steel bolt. Package of four.

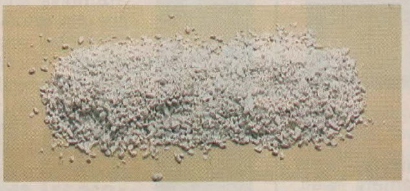
Superlevel E34,841 $22.95



A COTTON PATCH OF CLOTHS

All cotton flannel cleaning patches are designed for cleaning small parts, lenses and laboratory equipment, especially melt indexers and capillary rheometers. Can be used for buffing and polishing. Package of 250. Two sizes.

1¾″ square	E34,756A	$12.50
3″ square	E34,771A	$29.50



MOISTURE REMOVING SILICA GEL

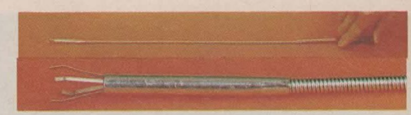
Chemical gel allows you to preserve garden blooms, leaves and grasses for decorative displays. Crystal-like gel is also a must for those who store optical equipment. Available in two sizes.

4 Pounds Gel	E34,864	$23.50
10 Pounds Gel	E34,866	$46.50

NOTHING BEATS A REAL CHAMOIS FOR STREAK-FREE CLEANING POWER

Split, cleaned, softened and tanned chamois absorbs seven times its weight. Brings out the natural lustre of a surface while eliminating streaks. Unequalled for shining silver, stainless steel and valuable jewelry. Since skins are finished on a standingwheel to prevent linting, chamois is superb for removing dust from TV or camera lens and screens, phonographic records or stereo equipment. Approximately 2 sq. feet in size. Yellow. Finished so there are no rough or stiff areas. Hand-washable.

Chamois C34,846B 2 sheets $19.95



FLEXIBLE PICK-UP TOOL

Mechanical fingers grab for you. 360 degree maneuverability. Spring tension control. 24″ long. Lets you reach impossible to get to places. Holds screws and nuts in place. For parts inspections, quality control, etc. Silver. E34,964 $14.50

Touch 'n Stick
Instant Adhesive

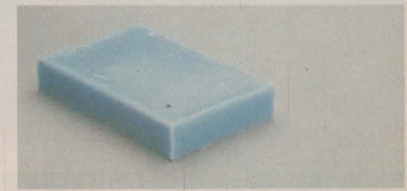
TOUCH 'N STICK

All-purpose spray provides instant high-strength tack. Quick curing. For fastening shingles, risers, subflooring, stair treads, more. Elastomer base resists heat and moisture. Contains no water or fluorocarbons. 12 oz. can. E34,971 $13.75

AEROSOL JENNICANS

Refillable cans allow you to make your own aerosol products. Fill halfway with liquid and pressurize to about 50 psi with compressor or pump. Aluminum.

28 oz. Jennican	C31,917	$19.50
21 oz. Jennican	C35,306	$18.50
Air Brush Sprayhead	E35,307	$9.95
5 Sprayheads. Interchangeable fine, medium and coarse heads and heads with extensions.	E35,308	$8.25
Pistol Grip Gun Handle.	E35,309	$8.50
Sprayhead. 18″ flexible head with brass insert & cross holes.	E35,310	$6.95



MOLD MAKING MATERIAL LETS YOU MAKE BODY MASKS, FACE MASKS OR COPY ALMOST ANY EXISTING CRAFT OBJECT

Flexwax 120 is the inexpensive way for making molds. Melts to a clear, honey-like liquid at 120°F. Brush or dip on. Cools in minutes. Make molds from carved objects, clay originals or most other craft items. Nontoxic. No volatiles. Inert material is reusable. Includes directions. 2⅓ pound block.

Flexwax E34,840A $22.50

Batteries

NiCad BATTERY CHARGER A REAL $$$ SAVER

Stop wasting money buying throwaway batteries. NiCad cells can be charged over and over using our charger. Charger plugs into any socket and draws power only when needed. Recharges AA batteries in four to five hours; nine volt, C and D batteries in 14 to 16 hours. AA, C and D recharging 2.9 VDC, 100ma; nine volt at 9 VDC, 5ma. 6 ft. cord. Charger is 8¼″ × 2½″ × 4″. NiCad batteries, rated to last five years or longer, are listed below.

NiCad Cell Charger C33,077 $21.50

Specially-priced Midland Battery Tester. Covers over 15 battery types from 1.35V to 22.5V. Tests most chemistries and indicates how battery will perform under load. E35,574 $32.95

PHOTOVOLTAIL (SOLAR) BATTERY CHARGER

SOLAR BATTERY CHARGER
SOLAR PANEL
SOLAR BATTERY CHARGER

New generation of **Solar battery panels,** now made in Canada. **HIVOD PACKS.** Extremely well designed and manufactured to high standards for most demanding applications in remote areas or built into other machinery. where vibration and abration conditions are present. These are equipped with diodes for delivering DC voltage for battery charging.

Number	Package	Votage	Current	Size	Price
C49,578	Single	3	300 mA	5″ x 12″	**$73.50**
C49,579	Dual	6	240 mA	5″ x 12″	**$79.50**
C49,580	Dual	9	150 mA	5″ x 12″	**$89.50**
C49,581	Dual	12	130 mA	5″ x 12″	**$99.50**
C49,730	Mini	6	100 mA	5″ x 8″	**$35.00**
C49 731	12 Volt flourescent sec/continued lamp.				**$64.50**

Provides very bright light at a self-contained minimum battery. New technology breakthrough.

RECHARGEABLE NiCad BATTERIES

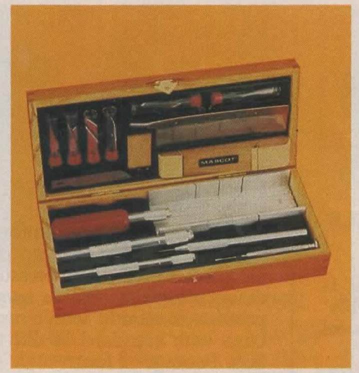
When the power is gone, simply recharge these energy cells for new life 1,000 times over. Saves $$$$$.

Two "AA" NiCad Batteries	C33,073	$15.50
Two "C" NiCad Batteries	C33,074	$12.50
Two "D" NiCad Batteries	C33,075	$13.50
One 9V NiCad Battery	C33,076	$15.50
Four "AAA" NiCads & Charger Unit	E33,648	$39.50

One High Capacity "D" NiCad Battery. Can be charged in standard chargers. Max. 4,000mA. E35,880 $19.95

Battery Tester C33,440 $11.50

Miniature Tools



PRECISION TOOLS FOR THE HOBBYIST

Here's what every hobbyist needs. Precision tools are scaled for model, miniatures, woodworking and carving work. Packed inside a handsome wooden chest, complete with snaplock closure and storage trays are 28 pieces.

- —Lightweight knife
- —Heavy-duty knife
- —Miter box
- —Sander
- —20 Assorted knife blades
- —Medium-weight knife
- —Hobby awl
- —Razor saw
- —Screwdriver

Blades are housed in protective tubes. Chest measures 10″ x 4¼″ x 2¼″. A practical gift for anytime of the year. Or pick one up for yourself to keep in the office or on the workshop bench.

Hobbyist Tool Set C35,304 $47.50

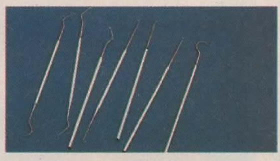
YOUR COMPLETE INDEX
IS ON PAGE 111

CARBIDE DRILL BITS

#75 drill bits produce 0.021″ diameter hole. ⅛″ shank. 1½″ long. Designed for high speed use with printed circuit boards. "Resharps." Package of five. C35,322A $12.50

4 PRONG HOLDER

Stainless steel tips grip, retrieve or display small items. Sure-grip. 4⅝″ length. ⅝″ maximum opening. Position screws, display small parts. C35,374 $9.50



7 USEFUL TOOLS

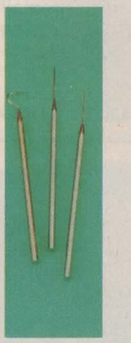
Pik Pack tool set is for all fine detail work. Surgical quality, German-made stainless steel tools are designed to last a lifetime. Range in size from 5¼″ to 7″ long. C33,059 $21,59

MAGNETIZE IT

Magnetize screwdrivers and small tools, speeding up small jobs. 1¹⁄₁₆″ square tool also demagnetizes magnetic charges. C34,537 $3.95

FILE BLOCK & CLAMP

Gives extra support and space for filing, sawing & drilling. 2½″ x 7½″ block. Clamp fits tables up to 1¾″ thick. For fine detail work on wood or metal. E35,371 $14.50



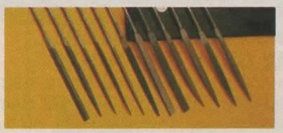
PROBING TOOLS

Three piece probe set useful for positioning, gluing, attaching, etc. Stainless steel. Flexible tips. 4⅜″ long. Straight, angle, curved tips. C35,379 $12.50

SURE-LOCK HEMOSTAT PLIERS

Pliers allow for hands-free clamping of small items, including wires. Scissor design. Adjustable tension. Stainless steel. Sure-lock grip.

Hemostat Pliers C40,571 $12.50



12 NEEDLE FILES

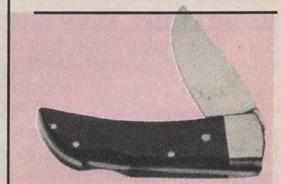
5½″ long files are built to industrial specs. Flat, round, diamond, oval and wedge shapes. Coarse to fine. Package of 12. C30113 $16,95

2 PARALLEL CLAMPS

2″ long jaws adjust to provide even pressure. 2¼″ adjusting shafts. 0 to 1″ clamp capacity. E35,372A $11.50

BUFF IT/POLISH IT

18 piece set fits all portable rotary tools. Brushes & mandrels have ⅛″ shanks. Burs, mounted points & circular saws have ³⁄₃₂″ shanks. Muslin buff, felt wheels. C35,380 $25.50



POCKET LOCKBACKS

Blades are made of special alloy for extra fine edge holding ability. A small masterpiece.

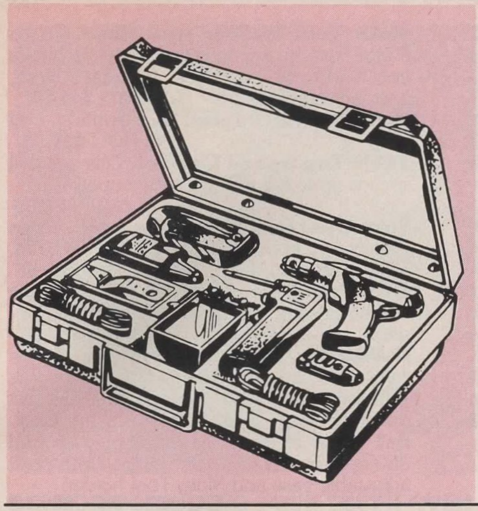
Green wood handle w/toothpick C49,241 $31.50

Rosewood handle C49,242 $28.50

All stainless steel C49,243 $18.50

FAST -SETTING CYANO ACRYLATE CEMENT

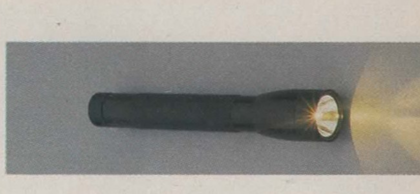
Super Adhesive is formulated to give instant 3 to 20 seconds) bonding and to work on metal, plastics, wood gemstones, glass, rubber, synthetics, fabrics, ceramics. It even works on oily surfaces. 3 gram, stand-up applicator bottle. C49,800 $4.25



TASK FORCE PRECISION POWER TOOLS

Unique new tools - portable, powerful, compact - to drill, solder and saw; to shape, sand, polish, engrave, easy to hold and handy to use. Will operate from transformer power pack, 12V D.C. car/boat battery, 9-12V dry cell battery or flashlight battery pack.
Task Force Kit includes: Precision Power Tool, 14,500 RPM; Precision Jig Saw, 4000 SPM; angle cuts 0 to 45° Precision 1/4" Capacity Drill; Removable grip handle; 1200 RPM; "Hot Shot" Solder Gun, melts solder in 3 to 5 seconds; 12 Volt Power Supply Transformer; Cigarette Lighter Adapter, 28 Pc. Accessory Kit, Carry/Storage Chest
Unit ship weight: 9 lbs. **C49,746 $159.50**

YOUR COMPLETE INDEX IS ON PAGE 111



20 TIMES MORE LIGHT FROM AIRCRAFT-GRADE PENLIGHT

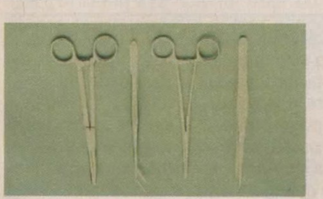
Argon lamp is up to 20 times more powerful than ordinary penlights. Just 5½" long. Machined anodized aircraft aluminum. Knurled grip. O-ring sealed. Waterproof to 200 ft. No external switch. Twist on/off. Weighs 4 oz. Spare bulb in tail cap. Includes two AA batteries. **E35,767 $32.50**

DRILL BITS FOR MICRO HOLES

20 piece set consists of quality, long-lasting carbon steel bits, from number 61 through 80 indexed. Bits measure from 0.013" to 0.038" in diameter. For precision holes in delicate operations. 20 Drill Bits **C41,941 $31.50**

6 PIECE WIRE BRUSH ASSORTMENT

Assortment in both fine and coarse includes two end brushes, one cap brush, pipe cleaning brush and three wire wheel brushes (1½", 2" and 3"). 6 pieces in all.
Bush Assortment
C34,067 $12.75

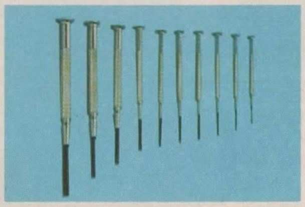


THIRD HAND HOBBY TOOLS

Chrome plated steel tools provide an extra hand in small assembly or repair projects. Includes two 7" tweezers, both straight and curved jaws, and two 7¼" hemostat locking pliers, also both straight and curved serrated jaws.
C34,588 $29.50

DELICATE TOUCH HOBBY MALLETS

Nicely balanced. Won't mar soft or delicate metals.
Brass Mallet — 9" hardwood handle. 2" head.
C33,908 $10.50
Interchangeable Mallet — Brass, nylon and fiber faces. 9" hardwood handle. 2" head.
C33,909 $17.50



MICRO SCREWDRIVERS

This 6 piece set is perfect for jewelers, camera buffs and hobbyists. Tempered steel blades. Swivel top. Non-slip knurled shaft. 0.024" to 0.15" blade widths (0.6 to 3.8mm). Packaged in handy storage pouch.
Screwdriver Set
C41,671 $9.50

CORDLESS DRILL

12,000 RPM tool is ideal for miniature work and delicate drilling, engraving and polishing jobs. Holds mirco drills #55-80. Powered by 3 "C" cells (not incl.). Includes 4 collets and 5 accessories. 8¾"L × 1½" dia. drill holds 3/32" & 1/8" shanks.
E34,309 $45.50
20 Micro Drills for Above
C41,941 $31.50

PRECISION STAINLESS STELL PLIERS

Rust-proof pliers with comfort grip. Spring-loaded jaws remain open until pressure is applied.
4" Curved Nose. C35,173; 4" Flat Nose. C35,172; 4" Flush Cutter. C35,171; 4" Needle Nose. C35,170; 4" Flat Nose. C35,169: 4" Round Nose. C35,168
Set of 6 C35,174 $86.50. $16.95 each.

SIX PIECE SCISSOR SET, A $69. VALUE FOR ONLY $27.50

This forged steel scissor assortment should take care of all your cutting needs. Set includes one each of bandage, fine and sewing scissors, and three all-purpose scissors, Super value!
Six Piece Scissor Set **E35,729 $27.50**

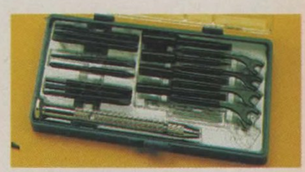
RETRIEVING TOOLS DO THE LEG WORK FOR YOU

Ullman's family of handy magnetic tip retrieving tools pick up elusive metal parts, large and small, even under water, oil, solvents or grease.
A) Telescopic Retrieving Tool. Extends from 16¼" to 26¼". Magnet on tip will lift objects up to one pound (16 ounces). **C34,715 $12.95**
B) Pocket Telescopic Tool. Folds to 4¼". Extends to 19" **C34,714 $8.95**
C) Pocket-Size Inspection Mirror And Extends to 17"

D) Spring-Flex Retrieving Tool. Flexible shaft 18 to 32" long tool. Magnet on tip lifts up to 1 pound, 2 ounces (18 ounces). **C34,716 $11.95**

RATCHET FOR CONFINED AREA USE

Ratchet only needs an 18 degree working arc. 20 piece set includes 30-tooth stainless steel ratchet, 12 Allen hex adapters, ¼" and ⅜" slotted head adapters, two Phillips adapters and more.
Ratchet Set **C33, 690 $46.50**



20 Piece Micro Tool Set

Metric size set has a variety of workshop and optic uses. Included are 1.5, 2.5 and 3.5 slotted screwdriver tips; #0 and #1 Phillips tips; awl; 1.5, 2, 2.5, 3, 3.5, 4, 4.5, and 5 nutdrivers; and 4, 4.5, 5, 5.5 and 6 open end wrenches. Quick release handle has non-slip knurled shaft, swivel top. Packed in plastic storage box. **C33,458 $21.50**

Headlights For People

Provide a reliable light in tight spots. Designed to be worn like eyeglasses. White polypropylene frames with bulbs on left and right sides. Powered by four "AAA" batteries (included). Bulbs are included.
Headlights For People **C33,250 $15.95**

VARIABLE SPEED MOTO TOOL KIT

Dial the speed to fit the job. Variable speed control from 5,000 to 28,000 RPM. Kit complete with what you need to grind, sand, polish, cut, rout, drill, saw, sharpen, deburr, shape or engrave. Moto tool has 100 percent ball bearing construction for durability and smooth operation. Permanent magnet motor provides steady, dependable power. 0.75 amps low speed; 0.9 amps high speed. 115V. Shatter-resistant nylon with external caps that allow for easy replacement of motor brushes. Kit includes 40 accessories: six cut off wheels, seven sanding discs, two high speed cutters, six wheel points, two sanding bands, two felt polishing wheels, two mandrels, a 1/8″ drill, wrench, dressing stone, polishing wheel, paste and cup brushes, drum sander, finger grip, steel saw, 3/32″ collet and 1/8″ collet in tool. Includes double wall polyethylene carrying case with snap lock.

Moto Tool Kit C35,680 $189.50

Moto Tool Holder And Base. Holds Moto Tool in any position, leaving hands free to control workpiece. Includes holder, post, adjustable base. C35,697 $44.50

Router Attachment. For routing and shaping. C35,787 $29.95

Table Top Speed Control. Lets you dial speeds up to full RPM. 5 AMP capacity. E35,682 $69.50

Foot Operated Speed Control. Varies speeds as you work. Settings up to full RPM. 5 AMP capacity. E35,683 $89.50

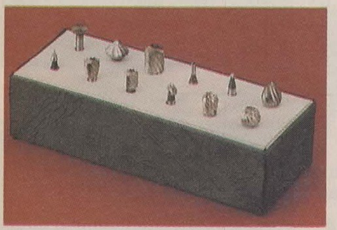
Drill Press. For drilling and routing. Table can be raised or lowered. Locks in any position. C35,684 $68.50

D-Vise And Moto Tool Holder. D-Vise gives you an extra hand. Has removable V-groove jaws, 2½″ jaw opening, die cast metal housing, 3 point non-rocking base. Ball swivel for fast vise positioning around 360° axis and over a 180° range. With post, adjustable base and Moto Tool holder. C35,685 $56.50

MICRO HOLE CARBON DRILL BITS

This 20-piece set is for precision holes in delicate operations. Carbon steel drill bits for precision work and durability. Set includes drill bits from number 61 to 80 indexed. Bits measure from 0.013 inch to 0.038 inch in diameter.

20 Micro Drill Bits C41,941 $31.50



HIGH SPEED STEEL CUTTERS

Set includes one dozen high speed steel cutters in assorted shapes, from circles to ovals, flat wheels to diamonds. 1/8″ shank. With vinyl pouch.

Steel Cutter Set C35,870 $84.50

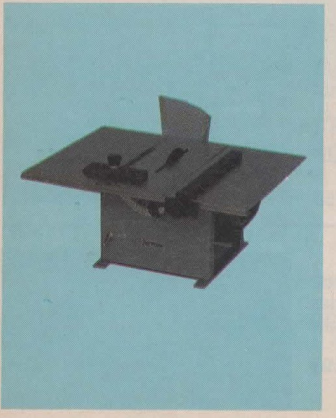
SCROLL SAW AND SANDER

15″ throat depth sander will handle boards up to 1¾″ thick. Rugged steel construction with reinforced frame sides. Front or side mount plate for scroll cuts and ripping long material. Also cuts light gauge metal, plastic, felt and other materials. Includes disc sander and power take-off for additional accessories. With rubber backing pad, adapter, three sanding discs and three saw blades. Weighs about 16 pounds. 1.4 AMP, 115V, 60Hz, AC only. Accepts attachments. C35,678

Scroll Saw And Sander $198.50

MOTO—SHOP KIT

Contains flexible shaft, drum sander and 4 sander bands, 5 saw blades, 2 emery wheel points, 2 bristle brushes, 1 wire brush, 1 high speed cutter, 1 drill bit, 3 collets and chuck wrench, 1 polishing compound stick, 3 sanding discs, 1 silicon point, and 1 buffing wheel. C49,678 $72.50

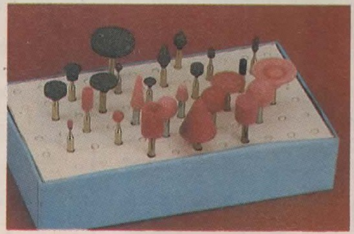


PRECISION TABLE SAW SIZED FOR MODEL MAKERS

Serious model makers will find this table saw exceptional in speed, accuracy and ease of operation. 9″ × 12″ table, rip fence and mitre guide. Table surface accommodates up to a 4″ cross cut width and rip cuts to 5″ wide. 1/15HP, 5,000 rpm motor. All steel mitre guide is adjustable through 360°. 0.032″ thick, 30 tooth saw blade. Up to 5/8″ cut depth. Single knob saw blade and rip fence adjustments. Tilt arbor rotates to 45°, returns quickly to 90° positive stop. Saw guard can be swung back for obstruction-free table surface. C35,714 $238.50

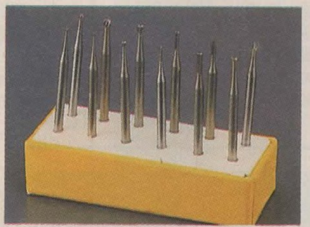
Fine Blade 4″ dia. 100 teeth.
C35,716 $13.75

SaW Dust Bag/attachment
C49,679 $14.50



MOUNTED STONE ASSORTMENT

25-piece set of silicon carbide grinding stones. 80 grit. For controlled, accurate cutting, shaping and detailing of glass, ceramic, stone, porcelain, plastic, other materials. Ideal for tungsten carbide and other hard, brittle steel. 1/8″ shank. Greenish charcoal gray. E35,869 $99.50



ENGRAVING BUR SET

One dozen small engraving burs for drilling, etching, carving and designing. 3/32″ shank. Packed in display/storage box. Assorted sizes.

Engraving Burs C35,871 $19.50

DISC BELT SANDER

Shapes, sands, polishes and sharpens most wood, plastic and metal material. Disc for rough sanding and shaping. Belt for finish sanding, sharpening and polishing. Platen for rigid belt sanding. 45° tilting table and adjustable mitre gauge for disc sanding of most angles. 2,700 SFPM belt, 4,400 RPM disc, 2.0 AMP motor. 115V. 60Hz. AC only. With two 1″ × 30″ belts and one 5″ disc. C35,677 $224.50

15 Sanding Discs. Five each of coarse, medium and fine grits. C35,782 $29.50

8 Sanding Belts. Two each in fine, very fine, medium and coarse grits. E35,783 $38.50

MICROFLAME TORCH
MODEL B

MICROFLAME GAS TORCH

Palm-size microflame torch provides instantaneous and precise heat only where it is needed. 5000° F (2760° C) fine point flame. Perfect for brazing and silver soldering lightweight metal parts. Includes flame tip, Micronox and Butane cylinders and instructions. E35,697 $47.50

Replacement Cylinders. Includes four Micronox and two Butane cylinders for one hour of continuous flame. E35,698 $21.95

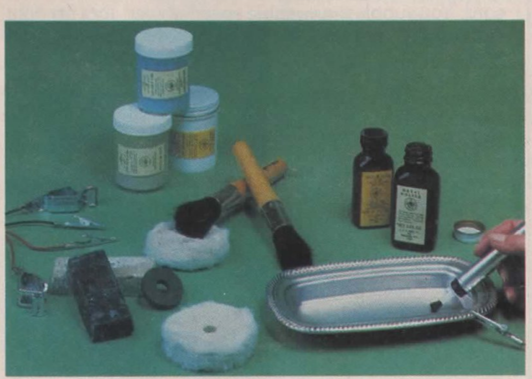
Silver Brazing Rods And Flux Tube. Includes 12 silver alloy brazing rods, 1/32″ × 6″ and tube of silver solder flux. Rod is of special alloy for brazing lightweight stainless steel, brass, copper, bronze and precious metals. E33,699 $13.95

Miscellaneous Tools

NO MORE GRINDING YOUR TEETH OVER A DULL TOOL, KNIFE OR DRILL BIT THAT DELAYS COMPLETION OF THAT IMPORTANT PROJECT. GET A RAZOR SHARP EDGE WITH THE WET STONE MACHINE. PRICED AND DESIGNED FOR HOME OR SHOP USE

Wet Stone machine hones, sharpens and grinds without heat buildup. Keep your knives razor sharp, your drill bits to the point where they bite cleanly and effortlessly into the work. Works on the principle of the old time wet stone machine. Water on the wheel cools the work. Wet fine grit stone wheel will not burn a tool's edge. Delivers a sharp, keep-cutting edge. No dangerous sparks! Feel new power from your axes, scissors and straight edges. Professional-quality machine has depth adjustment, plated tool rest, built-in drill bit guide, recessed on/off rocker switch and break-resistant plastic housing. 110V. Six-foot three-inch wire cord and rubber suction cup feet. 11¼" x 7" x 5".

Wet Stone Machine	C33,802	$149.50
180 Grit Replacement Stone	C34,412	$16.50
240 Grit Replacement Stone	C34,413	$17.95



DIP COAT OR BRUSH-ON ELECTROPLATING KITS

Restore scratched or worn jewelry, guns, cameras, trophies, antiques, printed circuits—almost anything made of metal—in minutes with our safe, non-cyanide process electroplating kits. Create your own jewelry. Each kit includes brush and dip-coater heads with anodes, battery case electrolyte (uses two "AA" cells, not included), metal polish or conditioner (to clean surface before plating), wire clip and instructions. Six kits to choose from.

	Electroplating		Refill Kits	
Set	**Item**	**Price**	**Item**	**Price**
Silver	D61,003	$38.50	D42,018	$23.50
24K Gold	D61,004	$84.50	D42,019	$44.50
Chromelike	D61,005	$31.50	D42,020	$10.50
Rhodium	D61,006	$84.50	D42,021	$44.50
Copper	D61,007	$25.50	D42,022	$8.95
Gloss Black	D61,008	$31.50	D42,023	$10.50

Brush-On Chrome Electroplating Kit. Make rusted, worn bumpers, grillwork, plumbing fixtures, nearly any chrome item shine like new. Includes enough chromelike material to replate two bumpers. Includes electro brush with metal anode, plating solution, battery leads and clamps for battery hook-up, buffing wheel and compound, grinding wheel. Works off any 12V battery or battery charger. **E71,950 $199.50**

HERE'S SOMETHING ANY HOBBYIST OR HOME HANDYMAN WILL SPRING FOR—A 505-PIECE SPRING ASSORTMENT

Includes a variety of industrial quality metal springs for factory, home or farm use. Includes torsion, extension and compression springs. Because you are buying in bulk, you save many times the single spring price. 505 pcs.

E34,767 $28.50

SUPER SENSITIVE ELECTRONIC STETHOSCOPE

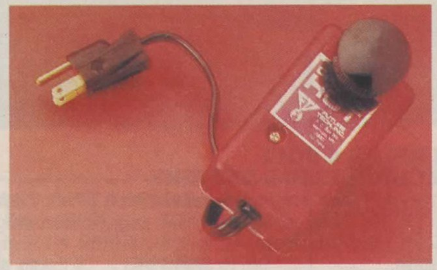
A miniaturized system with electronics in the head! The sliding switch selects cardiac or respiratory sounds without distortion. Includes binaurals; protected earphone; power switch; battery. 31" x 4" x 2".

Electronic Stethoscope **C61,223 $122.50**

BRASS WIRE BRUSH HAS VARIETY OF INDUSTRIAL USES

1½" × ½" brass surface area. 8" curved wooden handle. 3 × 7 rows of pure brass wire.

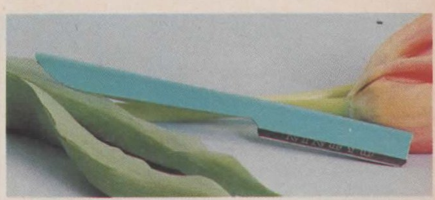
Set of 2 Brushes C34,346A $10.50



HANDI-HEAT DELIVERS PENETRATING WARMTH

Delivers between 300 and 400 degree temperature range at surface in minutes. Attaches magnetically to car engines, pipes, oil pans and more to quickly defrost, warm and prevent freeze-ups. 2¼" x 3¾" x 1½". Six-foot length of grounded wire. Operates economically on standard house current. Draws only two amps maximum. Thermostatically controlled at preset heating range. Forty pound test magnet. High temperature phenolic plastic case with removable handle. Cord is heat and oil resistant. For vehicles, water tanks, chain saws, livestock feeders, pumps and valves.

Handi-Heat **C34,519 $29.95**



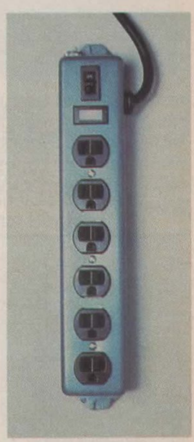
SHARP DISPOSABLE RAZOR BLADES

So inexpensive that you can discard them when they get dull. Sharp 2" single edge blade in handle. 5" overall. Florists and hobbyists love them. Package of 50 knives.

Razor Blade Knives **E70,369 $23.95**

Quantity Discount Available

POWERMATE MULTIPLE OUTLET



Powermate puts six outlets at your fingertips! Ideal for homes, offices, garages, shops. Safe, with a built-in 15 amp circuit breaker to prevent overloading. 6 ft. power cord. 12 inches long; fits snugly on wall or counter.

Powermate Outlet
C31,265 $29.50

HOBBY ANVIL

Miniature anvil is designed for hobbyists and those working with small precision parts. Shape, flatten or bend items on the 5½ square inch work surface. Cast iron anvil weighs 23 ounces. Flat surface measures 1⅝" x 3⅜". Anvil measures 2½" high and 5⅛" long. Round arm measures 1½" long. American made. Superb tool for those involved in miniature products. Unique desk top accessory. Red.

Hobby Anvil **E34,789 $12.95**

HEAT GUN

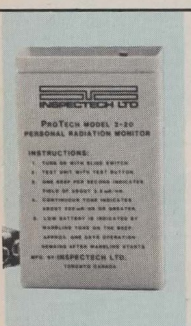
Provides a continuous flow of clean, electrically heated air up to 750°F (120V). Useful for stripping paint, defrosting, softening putty & plastics. Adjustable base rotates 90° for bench use. 10¾" x 6½" x 11½". 3 lbs.

Heat Gun **C31,193 $195.00**

SUPER STRONG KEVLAR® FIBER BY DUPONT

Lightweight, aramid fiber is five times stronger than steel on an equal weight basis. High modulus material is the same fiber that's used in bullet-proof vests. Has high flame and cut resistance and useful properties over a wide range of temperatures. Kevlar® is used in broad-woven fabrics, coated fabric reinforcement and for ropes, cables, webbing and tapes. 600 yard spool. Natural yellow color.

Kevlar® **E34,863** **$22.95**

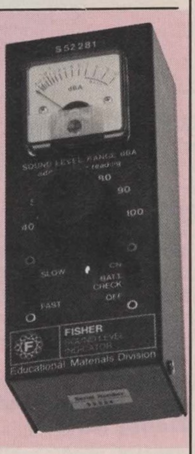


Radiation Personal, Belt Worn Alarm, for field or Laboratory use. Detects Gamma and x-rays, low range 60 chips/min in a/mr/hr field, high range 60 chips/min in a 30mr/hr field, solid state. PV batteries, size 2½ x 4½ x 1¼ thick, WT 8 oz.

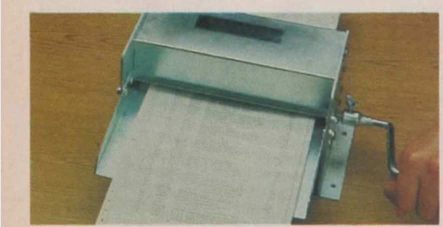
Radiation Alarm
C49,178 **$379.50**

Portable Sound Level Meter, Checks noise range 36-110 dBA, cover frequency range 31.5 to 6000 HZ, transistorized, 3 controls, 7 position attentuator, 9V battery included.

Sound Level Meter
C49,316 **$368.50**



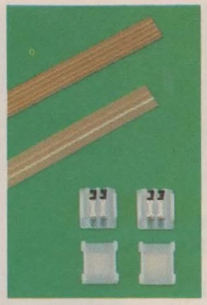
EFSTONSCIENCE Inc.
Science & Technology Agora
3350 Dufferin St., Toronto
Ontario, Canada M6A 3A4
Tel: (416) 787-4581
Tlx: 06-969864



SHRED IMPORTANT PAPERS WITH THIS ECONOMY SHREDDER

Shredder turns computer files, important memos and other documents into ⅝" strips. Operated by hand crank. Fits over a wastepaper basket. Silver-gray metal top. Handles standard 8½" x 11" paper. To shred computer paper, simply fold in half.

E34,842 **$96.50**



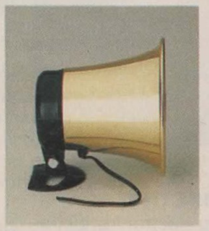
INVISIBLE WIRE

Low voltage flat wire comes in strips with permanent adhesive backing. Extend intercoms, speakers, security alarms, doorbells, etc. Tape is easily concealed by paint or wallpaper. Min. order 25 ft.

Trak Tape. For general applications. Two copper conductors w/3/16" spacing. ⅝" wide. 0.0003" thickness. 30V@3 amp.
E35,354 **$0.75/foot**

Sound Trak. For speaker applications. Two copper conductors (one 1¼% silver plated) w/3/16" spacing. ⅝" wide. 0.005" thickness. 30V@3 amp.
E35,355 **$1.05/foot**

Connectors. (pkg. of 12.) **E35,356A** **$14.50**



5" PAGING SPEAKER

Indoor/outdoor re-entrant type 8 OHM speaker. Withstands 30% input power overload. 200-1500Hz frequency response. Power: 10W. Aluminum with gold-tone finish. 5⅜", 5"dp. Bracket mounted. 3 lbs.

E35,047 $29.50
ON SALE $19.50

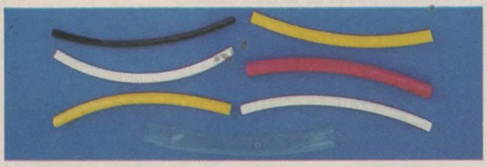
HAND WINCH HELPS MOVE HEAVY OBJECTS WITH EASE

600 pound rated capacity. Designed for industrial use with reinforced arc welded reels, embossed and reinforced bases and high carbon steel gears. Single gear ratio 3.2:1. One way ratched. Load matched gear ratios for easier cranking. Permanently lubricated drive shaft bearings. Maximum mechanical advantage 51. Metallic copper bronze color. Takes ⅛" cable (not included).

Hand Winch
E34,893 **$45.95**

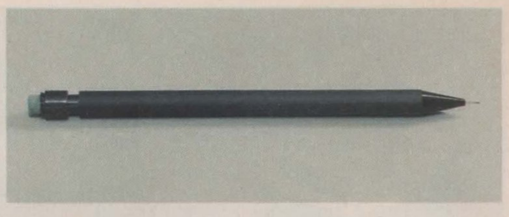
SURPLUS 6 VOLT RECHARGEABLE BATTERY

3 two-volt lead acid cells sealed into a plastic case. 1¾" X 3⅛" X 5". 6 volts for five amp hours rating. Clean takeouts from AC-power failure back-up system. **E34,779** **$21.50**



HEAT SHRINKABLE TUBING ASSORTMENT

Tubing shrinks to half its original size when heated. Use heat gun, oven, soldering iron or match. 15 piece assortment. Each is 6" long. Different colors. Thin wall tubing varies in diameter from 1/16" to ½". For insulating terminals, connectors, wire splices and tool handles. **E35,338** **$18.50**



THE MECHANICAL PENCIL OF TOMORROW . . . TODAY!

Sleek 0.5mm thin lead pencil has superb writing characteristics. Soft rubber feel is easier on the fingers than wood pencils. A push on the eraser advances the lead. The choice of writers, accountants, entry clerks & engineers. Black plastic pencils are designed to sell for $2 each. Our price in four dozen lots is about $1 each.

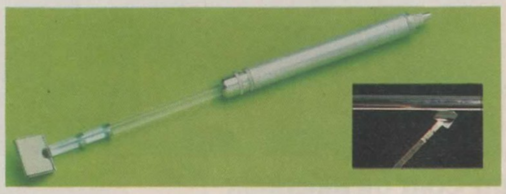
Four Dozen Pencils	**E34,074**	**$49.50**
One Dozen Pencils	**E35,730**	**$15.95**

Extra Lead (pkg. of 24) and Erasers (pkg. of 4)
E34,088 **$9.25**

COMPACT AND VERSATILE HAND-POWERED DRILL SAVES TIME AND EFFORT

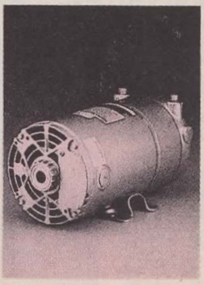
Self-contained drill does the job in less time than you spend searching for the power drill, bits and extension cord. You supply the variable speed power. Tool fits right in the palm, with the shank held between the index and middle fingers to focus drilling pressure. Includes four drill bits (3/32", ⅛", 5/32" and 3/16") which store in the handle. Enclosed gears for smooth operation. 8" x 4" unit. Weighs about a half-pound.

Screwball Hand Drill **C34,316** **$19.50**



TWO PIECE ILLUMINATED INSPECTION MIRROR AND POCKET FLASHLIGHT

Angled 1" x 1" framed reflecting mirror provides illuminated viewing of inaccessible areas, including behind pipes. Mirror rod detaches from flashlight. Push-button or continuous on twist switch. Aluminum alloy case. 12" overall length. Requires two "AA" batteries (not incl.).
E34,788 **$27.50**



SURPLUS AIR COMPRESSOR

New condition rotary vane air compressor. ¼ horsepower. 115V GE motor. 60 cycle single phase. 1725 RPM. 60Hz. Thermally protected. Rated at: 0psi-2.5CFM; 5psi-2.1CFM; 10psi-1.7CFM; 15psi-1.4CFM. Max. pressure 10psi continuous, 15CFM intermittent. With filter. 10½"L × 6½"H × 6"W. 30 lbs. Oil-less motor mount.
E35,939 **$198.50**

CANADA COMPUTER ARM Clamps right on to your desk and is ready to swing into action at all times. 24" (61cm) long, 360 action radius, plate size 16 x 20" (41 x 51 cm) load capacity 100 lbs. (45 kg.) With an attractive wood finish.

Computer Arm C49,359 $199.50 ea.

CABLE TIES

Self-locking, tough and flexible plastic ties. Weather resistant. Natural color. Bag 100 includes three sizes: 0.125" x 4³⁄₁₆", 18 pound tensile; 0.190" x 6¼", 50 pound tensile; 0.190" x 8", 50 pound tensile.

F35,545 $12.95

FINEST STETHOSCOPE ON THE MARKET

Sprague-Rappaport Stethoscope features non-chill head, 2 diaphragms and 3 bells that permit localization of high, medium and low-pitched sounds. 23½" long.

Stethoscope F31,137 $29.95

10,000 or 5,000 Lumen Spotlights or Floods With Rated Life of 2,000 hours

Tungsten halogen lamps — most powerful filament type. Operate in any position! Retain 97% of initial brightness throughout their long life. Excellent indoors or out for spotlights, flood lamps or general use. Feature self-cleaning iodine cycle & tapered screw base for accurate optical alignment. Use with socket or adapter below. Quartz envelope provides resistance to thermal shock. Internally fused. Color temp. approx. 3,000°K for 120 V AC/DC Specifications included.

500W 10,000 lumens 3-5/8" x 1/2"	**C40,779**	**$44.50**
250W 5,00 lumens 3" x 1/2"	**C40,780**	**$41.50**
Socket for above lamps.	**E40,781**	**$19.50**

BALL BEARING LAZY SUSANS

Heavy gauge zinc-plated steel, precision balls, deep races, 5⁄16" thick. Screw holes offset so load bearing sections clear each other.

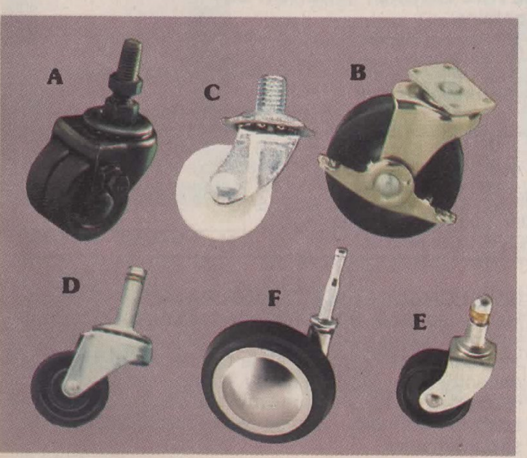
3" Square Plate. 1⁹⁄₃₂" center hole. 18" table size. 200 load pounds. 3½ oz. **D40,600 $3.95**

4" Square Plate. 2⅛" center hole. 25" table size. 300 load pounds. 6 oz. **D40,601 $4.95**

6⅛" Square Plate. 4¹¹⁄₁₆" center hole. 30" table size. 500 load pounds. 10 oz. **D40,602 $6.95**

12" Round Plate. 6⁵⁄₁₆" center hole. 60" table size. 1,000 load pounds. 30 oz. **D60,327 $12.95**

Heavy Duty Office Turntable. Under 18" × 24" × ¾" simulated wood finish table is a 12" diameter, ball-bearing movement, Lazy Susan. Holds up to 1,000 pounds. Instant office help. **E31,789 $79.50**



A CAST OF CASTERS

(A) Swivel Type. Hard rubber wheels. 2" × 2½" dia. ½" × 2" nut. Used. Set of 2. **E34,593A $7.50**

(B) Black Plastic 1½" Dia. 7⁄16" dia. pop-in stem and retention ring. Set of 2. New. **E34,594A $6.50**

(C) White Plastic 1" Dia. ½" stem and ⅜-16 thread. New. Set of 2. **E34,584A $11.50**

(D) 3" Dia. Wheels. 2 with start & stop plates, 1 without. Pre-drilled mounting holes. New. **E34,959A $6.50**

(E) Plastic 1½" Dia. 7⁄16" dia. × 1⅞" pop-in stem and retention ring. Set 2. New **E35,300A $11.95**

(F) Ball Casters. 1 with stops, 1 without. New **E31,982A $14.50**

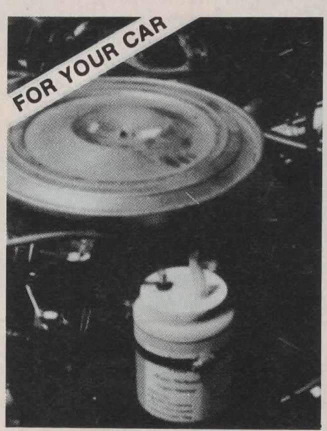
VELCRO FASTENERS

Adhesive-Backed Velcro Hook And Loop By The Yard—Attach just about anything anywhere with this unique fastening material. 1" wide hooks and loops in 100 percent nylon. Mount small pictures, attach quartz clocks to desks or car dashboards, use as an industrial fastener, etc. Black.

1 Meter Each Hook and Loop	**C34,215**	**$3.95**
5 Meters Hook and Loop	**C35,457**	**$19.50**
25 Meters Hook and Loop	**C34.889**	**$83.50**

Non-Adhesive — Positive locking tape. Polyoefin. Black. Non-adhesive. 500 to 1,000 closure lifespan.

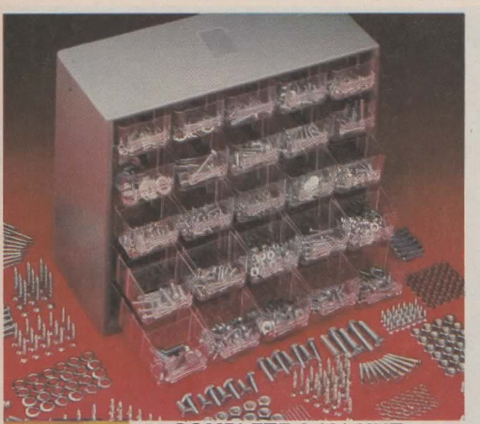
1 Meter Hook and Loop ¾" wide	**C35,432**	**$2.25**
10 Meters Hook and Loop ¾" wide	**C35,459**	**$19.50**
1 Meter Hook and Loop 1" wide	**C35,433**	**$2.50**
10 Meters Hook and Loop 1" wide	**C35,460**	**$21.50**
1 Meter Hook and Loop 1½" wide	**C35,434**	**$3.95**
10 Meters Hook and Loop 1½" wide	**C35,461**	**$32.50**
1 Meter Hook and Loop 2" wide	**C35,435**	**$4.95**
25 Meters Hook and Loop 2" wide	**C35,462**	**$44.50**

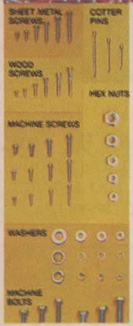


Water Vapor Injection NOW! The Gas Saver that works! Smooths out, cools down and controls hot, dry, engine-damaging denotation to give you MORE MILES PER GALLON - INCREASED POWER - FASTER ACCELERATION! The purpose of water vapor injection: to let your engine burn less gas more efficiently. The Water Vapor Injection introduces into the fule system, a volume of water vapor that is controlled automatically through vacuum demand, by the needs of the engine itself. This regulated volume of water vapor mixes with the fuel/air charge entering the engine's combustion chambers. The presence of cooling water vapor in the fuel charge cools and smooths out the normally hot, dry denotations that drive your engine. The result is that every precious drop of gasoline is consumed in a slow, smooth flame that releases more power to drive the engine...but uses less gas to do it!! Get premium performance on lower cost gas! Water Vapor injection also cleans hard carbon deposits from the inside of your engine. Easy to install for all cars, vans, pickups, RVs, motor homes - domestic or imported! Simple, automatic operation - no moving parts to wear out. Cannot damage engine or cause rust. Pays for itself many times over!

Complete Water Vapour Injection System

C49,387 $28.50 each





COMPLETE 2,101 NUT, BOLT, WASHER, FASTENER ASSORTMENT AND CABINET…WAS $59.50. NOW $39.50

Giant industrial quality 2,201-piece assortment arranged in one large 25-bin cabinet. Fasteners are made of industrial specification zinc-plated, rust resistant #2 grade steel. We've included six sizes each of sheet metal screws, wood screws, machine bolts, 12 sizes of machine screws, five sizes of hex nuts, four sizes of cotter pins and 12 sizes of washers. Plastic cabinet. **E34,362 $39.50**

LETTERBOMB VISUALIZER
SIRCHIE

LETTER BOMB VISUALIZER

This unique chemical solution makes opaque paper temporarily translucent. Applied to an envelope, it enables an investigator to visualize contents, returning the paper to normal. Non-flammable, non-detructive, non-conductive! 6oz. bottle.
E33,583 $69.50

Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4

STUD SENSOR

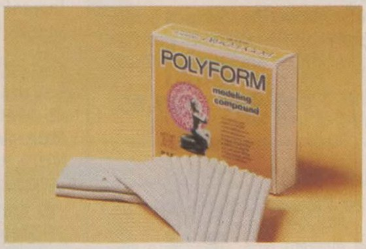
THE STUD SENSOR DOES THE JOB RIGHT THE FIRST TIME

No more aggravating banging on the wall to locate a stud. Sensor eliminates foul-ups. Electronic sensor pinpoints the location of frame members inside walls. Pass sensor across a plaster or dry wall. LED display indicates when a stud or joist has been located. Also precisely indicates the wall density. Palm size. Operates on one nine volt battery (not included). A handy idea for home or office workshops.
Stud Sensor C31,822 $28.50

Mountains In Minutes
Latex Rubber Mold Compound

MULTI-USE LATEX RUBBER MOLD COMPOUND

Duplicates almost any object in detail. Forms flexible, durable molds. Use with plaster, expandable foams or similar materials. 1 quart container.
Compound E42,446 $35.50



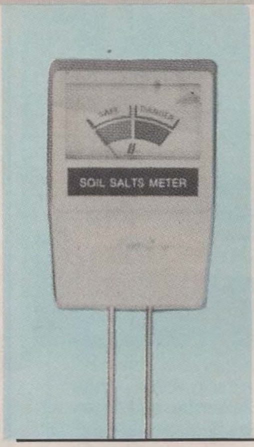
MODELING PLASTIC STAYS SOFT UNTIL IT'S BAKED

Prepare product designs easily without premature hardening. Ideal for industrial designers. White plastic material won't dry out. Smooth, non-sticky and self-structuring. Won't stain or stick to skin. Bake it at 325° F for 15 minutes to harden. Can be sanded, carved or drilled. Non-toxic.
Modeling Plastic (2 lb.)
E60,794 $16.95
Modeling Plastic (8 lb.)
E71,205 $78.50

CASTOLITE
CASTOLITE-AC
CAUTION

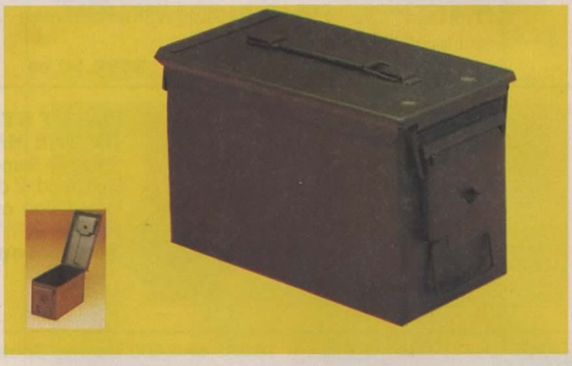
CLEAR CASTING PLASTIC

This top quality resin hardens to water clear. Pours like water and sets like glass at room temperature. An excellent resin. 1 quart. Comes with one bottle of hardener.
Clear Casting Plastic
E33,620 $29.50



SOIL TEST CENTRE

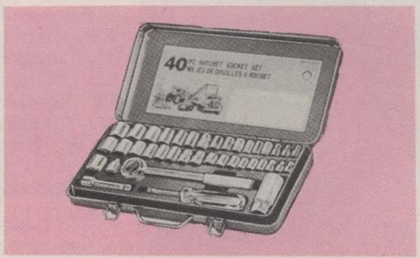
pH Computer
In one minute the pH Computer determines the acid/alkaline composition of your soil…whether it be in a garden plot or a container. Directions include desired range for 350 plants, grass, crops, fruits, shrubs, trees, vegetables, herbs, indoor and outdoor plants. Computer tells user what to do if soil is not in desired pH range.
pH Computer C33,047 $24.95
FERTILIZER ANALYSER
C49,280 $22.50
MOISTURE/LIGHT PLANT COMPUTER
C49,281 $21.50



MILITARY CASES MAKE EXCELLENT STOW'N'CARRY CONTAINERS…AND ARE NOW AVAILABLE IN THREE CONVENIENT SIZES

These weatherproof utility boxes are not surplus, but new, and made to U.S. Government specifications. Hermetically sealed by a rubber gasket and closure assembly. Heavy gauge steel construction with welded seams. Forest green boxes are corrosion resistant, watertight and airtight. With removable cover. Available in medium, large or extra large sizes.

Medium Storage Case ($6'' \times 8'' \times 11''$)	E33,175	$32.50
Large Storage Case ($10\frac{15}{16}'' \times 6\frac{3}{32}'' \times 12''$)	E34,616	$39.50
Extra Large Storage Case ($13'' \times 11'' \times 5\frac{1}{2}''$)	E34.617	$43.50



40 PC. COMBINATION 1/4" AND 3/8" SAE & METRIC SOCKET WRENCH SET

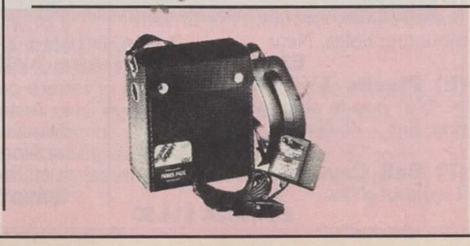
Contains:
1—8" Ratchet Handle
1—3" Extension
1—Nut Driver Handle
1—Spark Plug Socket

S.A.E. Inch Size Sockets
3—1/4" Drive 8 pt. Sockets 1/4", 5/16", 3/8"
12—1/4" Drive Sockets: 5/32", 3/16", 7/32", 1/4", 9/32", 5/16", 11/32" 3/8", 13/32", 7/16", 15/32", 1/2"
3—3/8" Drive Sockets: 7/16", 1/2", 5/8"

1—3/8" x 1/4" Adaptor
1—Spin Disc
1—Plastic Carrying Case

Metric Size Sockets
12—1/4" Drive Sockets, 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10, 11, 12, 13 mm
3—3/8" Drive Sockets: 12, 14, 16mm

C49,651 $14.95



12V RECHARGEABLE POWER PACK

Handy portable power source for emergency lights, sound systems, recorders - anything equipped with a 12 Volt cigarette lighter style connector. 6 amp hour capacity for long energy supply. Power pack recharges in 16-24 hours with 115 VAC charging unit adapter included. Comes with carrying case with shoulder strap.
Power Pack C49,452 $122.50

RARE EARTH MAGNETS

Neodymium Iron-Boron Magnets of Maximum Energy, Typical 27 x 10⁶G. Residual Induction 10800G. Coersive Force Hc 95000e

C49570	.330 x .125 Disc	**$34.50**
C49571	.500 x .125 Disc	**$51.25**
C49572	.700 x .187 Disc	**$73.00**
C49573	1.000 x .187 Disc	**$126.50**
C49574	1.000 x .310 x .187 Rect	**$73.50**

More sizes and Technical information available on request.

ELECTRO-MAGNET

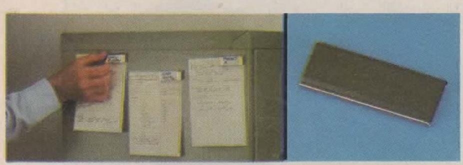
125ohm resistance. 12V. 1⅛″ dia. 9/16″ thick. ¼″ bore. Aluminum casing. 35 gauge magnet wire. Package of five.

E35, 199 $16.50

MEASURE MAGNETIC FLUX

Micropower gaussmeter is accurate to within 0.25% ± 1 digit for all ranges. Precalibrated probes. Range from 19.99 gauss full-scale to 19.99 kilogauss. Takes 9V battery. Probes not included.

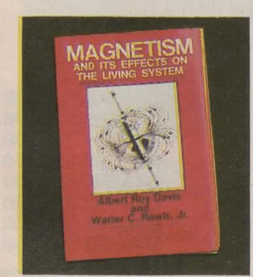
Gaussmeter	C33,445	$735.00
Transverse Probe	C33,446	$159.50
Axial Probe	C34,204	$159.50
Magnetometer Probe	C34,205	$574.50



PLANNING/DESIGN BOARD MAGNETS

Scratch resistant flexible rubber magnets are covered by a coated metal keeper. Label can be attached to face. For corporate organization and planning charts. Double as bulletin board magnets. 2″ long. ¾″ wide. 3/16″ thick. ¾ pound lift.

Package of 10	C49,562	$8.95
Package of 25	C49,502B	$18.95



MAGNETISM EFFECTS BOOK

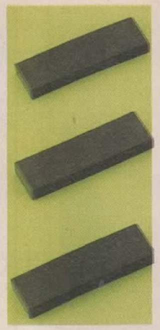
132 page hardback book discusses Biomagnetism, from describing advances in using magnetism to program improved intelligence and long life.

E9503 $29.50

35 POUND PULL CERAMIC MAGNET

2⅝″ O.D. In steel case with brass swivel screw eyelet.

C42,098 $12.50



RECTANGULAR MAGNETS

Rubberized magnets are 2″ long, ⅝″ wide and ¼″ thick. Will lift about ⅞ of a pound.

Package of 10
C34,962
$8.95
Package of 50
C34,963A
$46.50

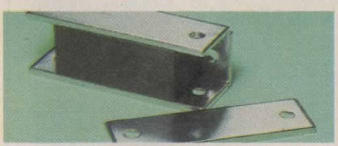
TEACH STUDENTS MAGNETISM PRINCIPLES

Magnet pulls one pound. Poles are clearly marked. 6″ x ¾″ x ¼″.

C40, 421 2 for $11.50

250 gr of Iron Fillings Excellent for demonstrating magnetic properties.

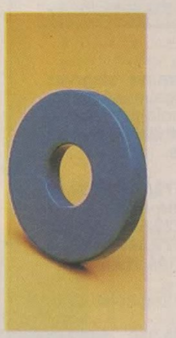
250 gr C60,176A $2.50



CERAMIC MAGNETS WITH POLE PIECES

Lifts 40 lbs. with pole pieces and 3 lbs. without. Poles located within their largest faces. Wt. 10oz. 1⅞″ x ⅞″ x ⅜″.

Pkg. of 2 C40,818 $6.95
Pkg. of 12 C60,528 $41.50



COATED CERAMIC MAGNET

Powerful barium-ferrite based ceramic magnet with Plastisol coating to prevent rusting and scratching. 3½″ dia. x 9/16″ thick. 1⅛″ center hole. 6 lb. pull.

C31,052
$19.95

Magnaprobe

MAGNAPROBE TRACES MAGNETIC FIELDS INSTANTLY

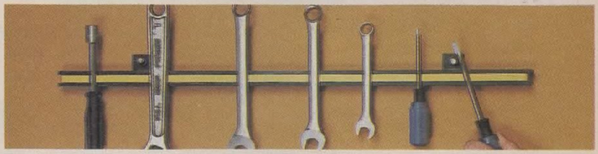
Demonstrates a magnetic field's 3-D nature. Unit has a tiny, sensitive, color-coded bar magnet which pivots on a rotatable bearing mounted on three axes. 4″ x 1″ x 1½″. In carrying pouch.

Magnaprobe **C42,217 $29.50**

PICK UP AND DISPOSE OF MAGNETIC MATERIALS WITH HANDI-MAG

20-pound pull magnet has handy instant release handle. Pull of the handle releases the gathered material. 9¼″ high, 7″ wide, 3½″ diameter central pistol cylinder. Weighs 1.75 pounds. Can be used to align components, retrieve lost objects, clean up metal scatter, even behind corners.

E34,829 $86.50



TOOL HOLDER

Is highly powerful and permanently magnetized. 12 x 2″ bar holds large or small tools, releases them easily. One bar lifts over 200 lbs. of solid steel. Black with yellow Day-Glo stripe.

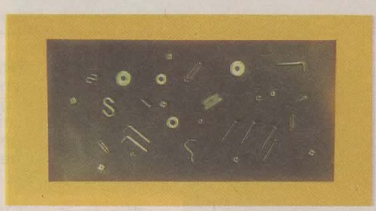
Tool Holder **C31,084 $16.95**

Edmund Scientific

CHANNEL MAGNET HAS 25 POUND PULL AND HANDLE

Powerful pocket-size magnet has a variety of uses, from holding up display charts and maps to industrial applications. Channel magnet has 25 pound pull. Convenient handle. 1¾″ ceramic magnet is bonded inside channel. Overall dimensions are 2¾″ x 1⅛″ x ½″.

25 Pound Magnet
E40,847 $11.95



FLEXIBLE MAGNETIC SHEETS

Rubberized magnetic sheets hold small ferrous metal parts during assembly work. Useful in ad signs. 1/32″ thick. Material can be easily cut with scissors.

3" x 3" Two sheets	C35,732A	$7.95
12" x 12" One sheet	C35,733	$8.95
6" x 36" One sheet	C61,011	$14.50

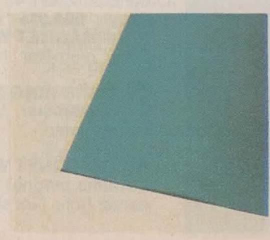
FLEXIBLE MAGNETIC STRIP

Flexible Magnetic Strip, easily cut or knife. For use at home, office, car etc. Brown only, available in 1/16" thickness.

½ x 30"	C49,257	$11.50
1 x 30"	C49,258	$19.50

Foam Backed Tape $0.95/foot

10/foot	¾"	D49,504
	1"	D49,505



MAGNA VIEW FILM

Mylar film reads magnetic fields on credit cards or checks leakage in transformers, circuit devices. Waterproof, tear resistant, reusable, flexible. 4″ x 4″ sheet. 0.006″ thick. Film has intergraded designed encapsulated chambers containing dry ferrous magnetic material.

C33,447 $12.50

Magnets

Ceramic Permanent Magnets. These ceramic permanent magnets are ferrite based, being made from a combination of iron and other chemicals. Ceramic magnets are extremely resistant to demagnetization, making them useful in a wide variety of industrial and home applications.

Shape	Size (Inches)	Thick-ness	Lb. Lift	Comments	Qty.	Number	Price
Disc	3/4"	1/4"	1/4	Grade 1	25	**D49,487**	**$ 8.95**
Disc	3/4"	1/4"	1/4	Grade 1	100	**D49,488**	**31.25**
Disc	3/8"	1/8"	1/16	Grade 1	25	**D41,986**	**3.50**
Disc	3/8"	1/8"	1/16	Grade 1	100	**D41,987**	**10.95**
Disc	1/2"	3/16"	1/8	Grade 1	25	**D40,820**	**3.95**
Disc	1/2"	3/16"	1/8	Grade 1	100	**D40,819**	**14.50**
Disc	1"	1/4"	1/4	Grade 1	20	**D49,478**	**7.95**
Cylinder	1/4"	1/4"	1/16	Grade 5	100	**D49,479**	**12.50**
Cylinder	1/4"	1/4"	1/16	Grade 5	200	**D49,480**	**19.50**
Ring	1/2"	1/8"	1/8	¼" centre hole - Grade 1	25	**D41,990**	**11.50**
Ring	1/2"	1/8"	1/8	¼" centre hole - Grade 1	100	**D41,991**	**39.50**
Ring	7/8"	1/8"	1/4	Rubber with oval center hole	25	**D49,481**	**3.95**
Ring	7/8"	1/8"	1/4	Rubber with oval center hole	100	**D49,482**	**15.50**
Ring	1-3/32"	1/4"	1/2	3/8" hole - Grade 1	10	**D49,483**	**9.95**
Ring	1-3/32"	1/4"	1/2	3/8" hole - Grade 1	20	**D49,484**	**19.50**
Ring	3/4"	1/4"	3/8	9/32" hole - Grade 1	25	**D49,485**	**12.95**
Ring	3/4"	1/4"	3/8	9/32" hole - Grade 1	100	**D49,486**	**42.95**
Ring	11/16"	1/8"	1/4	7/16" hole - Grade 1	25	**D49,489**	**9.50**
Ring	11/16"	1/8"	1/4	7/16" hole - Grade 1	100	**D49,490**	**32.50**
Ring	1-3/8"	1/4"	3/4	1" hole - Grade 1	10	**D49,491**	**12.50**
Ring	1-3/8"	1/4"	3/4	1" hole - Grade 1	20	**D49,492**	**22.50**
Square	1/2x1/2"	1/4"	1/4	Grade 1	10	**D49,493**	**2.95**
Square	1/2x1/2"	1/4"	1/4	3/16" hole - Grade 1	10	**D49,494**	**3.25**
Rectangular	1x3/4"	3/16"	1/2	3/16" hole - Grade 1	10	**D40,637**	**6.95**
Rectangular	1x3/4"	3/16"	1/2	3/16" hole - Grade 1	100	**D60,347**	**59.50**
Rectangular	1-7/8x7/8"	3/8"	3-5/8	Grade 5	2	**D41,798**	**3.95**
Rectangular	1-7/8x7/8"	3/8"	3-5/8	Grade 5	12	**D41,799**	**19.95**
Rectangular	1-1/2x3/4"	3/8"	2-1/2	Grade 5	10	**D49,498**	**12.95**
Rectangular	1-1/2x3/4"	3/8"	2-1/2	Grade 5	25	**D49,499**	**25.50**
Rectangular	1"x7/8"	1/4"	5	Channel Assembly	10	**D49,500**	**12.50**
Rectangular	2x15/16"	5/16"	13	Channel Assembly	10	**D49,502**	**19.95**
Rectangular	3x1-1/2"	1/2"	65	Channel Assembly	2	**D49,501**	**19.50**
Rectangular	3x1-1/2"	1/2"	65	Channel Assembly	12	**D49,503**	**109.50**

FERRIMAG CERAMIC MAGNETS

These permanent, oriented, Ferrimag Ceramic Magnets have a high energy output of up to 3.4 megagauss oersteds. Use these barium iron oxide magnets for holding devices, loudspeakers, generators. Each is ground within precise tolerance and meets with MMPA standards.

Square (3" x 3" x 7/8" w/15/16" hole)
E72,538 $39.50

Circular (5-1/4" Dia. X 7/8" Thk. w/2-5/8" dia. hole)
E72,539 $63.50

Rectangle (6" x 4" x 1"). **E72,540 $92.50**

HORSESHOE MAGNET SURPLUS SPECIAL HAS 150 POUND PULL

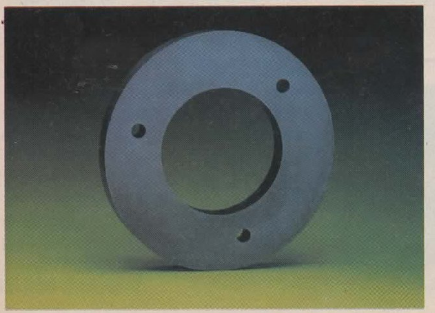
Reconditioned magnet with pre-cast mounting holes. With finished keeper.
E33,210 $375.00

HORSESHOE 25 POUND LIFT ALNICO.

Twin 5/9" x 1-1/4" gripping surfaces. 2-1/2" high. Aluminum, nickel, iron and cobalt blend.
E60,215 $38.50

HORSESHOE SURPLUS WITH 15 POUND LIFT.

4-7/8" x 1-1/4". Used. Not shown.
E34,882 $26.50



SURPLUS CERAMIC RING MAGNET

8-1/4" diameter permanent iron ferrite-based magnet was originally designed as part of a stereo speaker unit. New condition. 4-1/4" center hole. Pre-drilled holes in body. Grey **E34,585 $48.50**

RING MAGNET WITH 9 POUND PULL

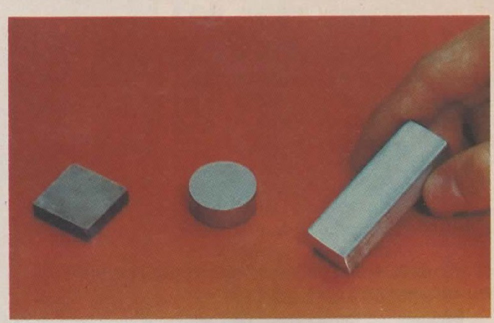
2-3/8" diameter. 1/2" thick. 7/8" center hole. Not shown.
E35,274 $12.50

CERAMIC RING MAGNET

3-3/8" diameter. 7/16" thick. 1-1/4" centre hole. Pulls 6 lbs. Not shown.
E31,589 $16.50

RING MAGNET WITH 10 POUND PULL

Ceramic magnet has 3-7/8" diameter. 5/16" thick. 1-7/8" center hole. Not shown. **E35,644 $19.50**



RARE EARTH COBALT MAGNETS PROVIDE EXTREME POWER IN A SMALL PACKAGE

These magnets combine the high induction values of Alnico magnets and high coercive force of ceramic magnets. They have an unusually high energy output volume, yet are almost immune to demagnetization. They are highly useful where extreme levels of magnetization are required under strict space and volume constraints.

E30,963 Disc Shape; 1.00" dia.; 0.375" thick; 8200 gauss; 7300 oerstads; 16.0 MAX **$92.50**

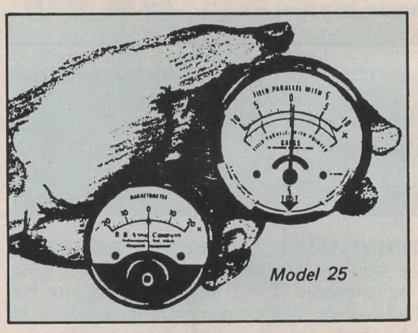
E30,962 Disc shape; 0.75" dia.; 0.25" thick; 8200 gauss; 7300 oerstads; 16.0 MAX **$79.50**

E30,964 Rectangular shape; 2.25" × 0.55"; 0.60" thick; 8500 gauss; 8000 oerstads; 18.0 MAX **$198.50**

E30,730 Ring shape; 0.75" O.D., 0.430" I.D.; 8000 gauss; 7000 oerstads; 16.0 MAX **$99.50**

E31,571 Ring shape; 0.625" O.D., 0.375" I.D.; 0.145" thick; 6700 gauss; 5800 oerstads; 16.0 MAX **$72.50**

E30,779 Square shape; 1" × 1"; 0.25" thick; 8000 gauss; 7000 oerstads; 16.0 MAX **$119.50**



POCKET MAGNETOMETERS

Residual magnetism in steel parts may readily determined in a few seconds time. The pointer instantly deflects to a reading on the scale porportional to the magnetism in the object at that point. The higher the reading the stronger the magnetic field. Are your parts satisfactorily magnetized or demagnetized?

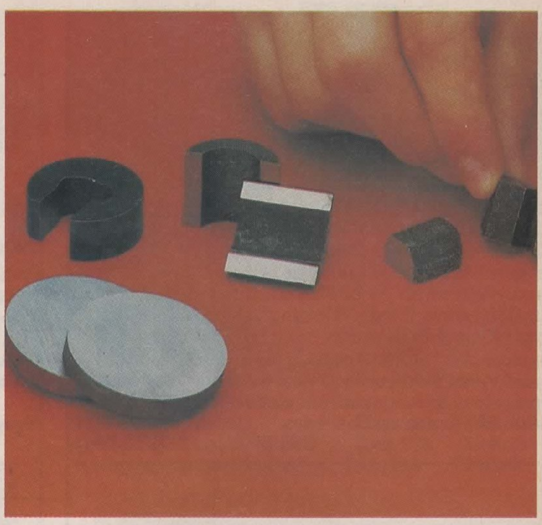
5-0-5 Gauge Magnetometer	**D49,588**	**$ 59.95**
20-0-20 Gauge Magnetometer	**D49,511**	**$ 59.95**
0.5-0-0.5 Anamaly Instrument	**D49,589**	**$215.00**
1-0-1 Anomaly Instrument	**D49,590**	**$219.50**
2-0-2 Anomaly Instrument	**D49,591**	**$203.50**
10-0-10 Anomaly Instrument	**D49,592**	**$168.50**
50-0-50 Anomaly Instrument	**D49,593**	**$186.50**
100-0-100 Anomaly Instrument	**D49,594**	**$206.50**

EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4
(416) 787-4581

ALNICO MAGNETS

Permanent-magnet alloys containing aluminum, nickel, iron and cobalt. Heating, cooling and reheating give them a high degree of stability and strength, increasing resistance to demagnetization and force of field.

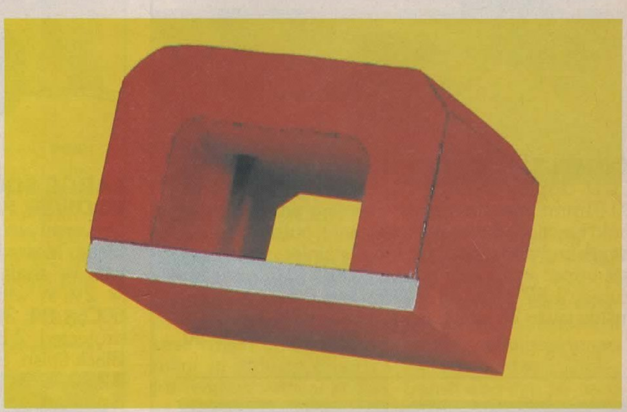
Shape	Size (Inches)	Thick-ness	Lb. Lift	Comments	Qty. per Pkg.	Number	Price
Bar	6 × ¾	¼″	1	NDEA specs. (CCSSO #2340)	2	C40,421B	$12.00
Cast Bar	⅞ × 3/16	⅛″	⅛	Has N&S Poles	16	E40,860	19.95
Bar	2 × 5/16	5/16″	⅕	Alnico	2	E42,421	12.50
Rectangular	¾ × ⅞	13/32″	1	Channel on one side	2	E42,187	10.95
Rectangular	7/16 × 3/16	⅛″	⅙	Two Corners beveled	100	E41,667	19.50
Disc	1 9/16	9/32″	3⅛	Alnico	2	E40,419	34.50
Cylinder	⅛ dia.	1 5/16″	⅜		10	E42,828	13.50
Cylinder	5/16 dia.	¾″	1		10	E31,882	9.75
Cylinder	⅜ dia.	3	1½	Alnico II-good demonstrator	2	C49,424	21.50
Cylinder	¼ dia.	1¾″	2⅛	Centerless ground-Alnico V	3	C49,423	14.95
Cylinder	3/16 dia.	1″	⅜	Centerless ground-Alnico V	6	C49,422	15.95
Cylinder	21/32 dia.	9/16″	1½	Small dia. 17/32″	8	E42,426	13.50
Ring Gap	1 7/32	7/16″	3	⅛″ gap, 7/16″ hole	4	E40,964	11.50
Channel	1 × 1	⅜″	3	Alnico V	2	E42,134	9.95
Break-Off	⅜ × ⅜	7/32″	3/16		12	E42,188	10.50
Break-Off	½ × ⅝	⅜″	11/16		10	E42,304	14.50
18-piece assortment approx. 18 oz.				Excellent for bulletin boards		E60,581	19.50
Horseshoe	¾ × ½	⅜″	1	⅜″ × ⅛″ Pole Faces	2	E35,120	6.50
Horseshoe	¾ × ¾	½″	8	½″ × ¼″ Pole Faces	2	E42,295	10.50
Horseshoe	1½ × 1½	⅝″	3	⅝″ × ⅜″ Pole Faces	2	E34,775	14.50
Rectangular	1½ × 1	⅜″	4		12	F33,027	28.75
Disc	1½ dia.	7/16″	3		4	E33,030	11.50
Cylinder	1 3/16 dia.	1¼″	2½		1	E33,248	13.50
Ring	½ dia.	3/16″	⅕	3/32 Center Hole	10	E33,537	9.95
Block	11/16 × ½	⅜″	7/16	Alnico	10	E42,508	14.50



STRONG, COMPACT MAGNETS

These strong, permanent type magnets are imported from England and made of Alcomax (similar to Alnico but more efficient). They're perfect for research labs and workshops. Use them for lifting a hot can, or for removing filing chips from holes. Horseshoe, power or pot type. Red finish, plated keeper.

No.	Approx. Pull Lbs.	Wdth. in.	Ht. in.	Depth in.	Pole Widdth in.	Between Poles Keeper	Oz. Weight	Price
C49,265	13	1-1/8	3/4	3/4	1/4	9/16	3	8.27
C49,266	17	1-5/16	1-3/8	5/8	3/8	5/16	4	10.75
C49,267	22	1-1/2	1	1	5/16	3/4	5	11.95
C49,652	30	1-3/4	1-1/8	1-1/8	5/16	7/8	8	15.50
C49,268	32	2-3/16	1-13/16	15/16	1/2	1-3/16	10	23.95
C49,269	37	2-7/16	2	15/16	5/8	1-3/16	13	29.95
C49,270	42	2-5/8	2-1/4	15/16	5/8	1-3/8	15	34.50
C49,271	50	3	2-1/2	15/16	3/4	1-1/2	20	46.50
C49,653	70	2-1/2	1-13/16	1-7/8	5/8	1-3/8	28	66.50



Sea Searcher Recover Magnet Lifts 140 lbs.

This magnet was developed for retrieving tools and ferrous equipment lost from their boats and docks; with easy handling and exceptionally high power in relation to weight and cost.

Dimensions: 3¼" high, 3½" wide and 1.2" thick. Weight 2.33 lbs.

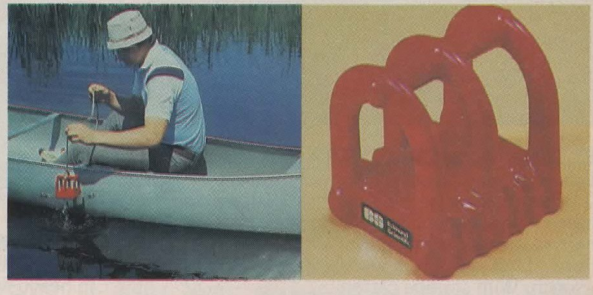
C49,411 **$37.50**

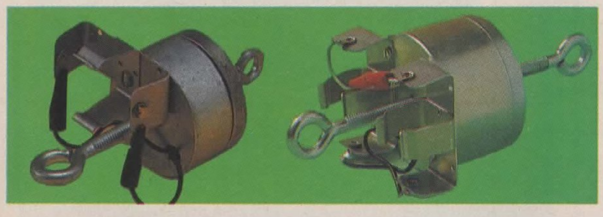
SEA-SEARCHER
RECOVERY MAGNET
CAPACITY 140 LBS — 64 KILOS
NAUTICALIA LTD.
SHEPPERTON, ENGLAND

THIS MIGHTY MAGNET LIFTS UP TO 200 POUNDS

Weighs only two pounds. We've stacked six ceramic magnets together with steel pole pieces, an aluminum frame and bar handle. Everything but the gripping surface is coated with a ⅛" thick, heat-fused orange poly-vinyl chloride coating which resists chemical and acid corrosion. Won't chip or peel. 4"x3¾"x3¼".

200 lb. Pull Magnet
E71,135 **$56.50**





EDMUND ELECTROMAGNETS HANDLE WITH EASE THE MOST DEMANDING OF TASKS

These small but tough electomagnets may be the answer to your lift demands. Magnets will handle plate or pipe handling, scrap separation, ferrous traps, ferrous contaminant removal, small parts handling and more. Our 500 pound electromagnet is 3" in diameter and 7½" long. Weighs only three pounds but has an astounding 500 pound lift capacity. Strong cold-rolled steel with eye bolts on each end. Uses two "D" cell batteries (not included).

500 Pound Electromagnet **D71,936** **$99.50**

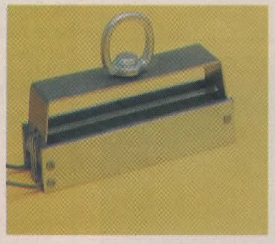
Our 200 pound electromagnet is 4¼" long with a 2¼" diameter. Operates on one 1½ volt "C" cell (not included) Together with the plated eyebolt, it has a lifting capacity of 200 pounds. Comes in a compact, durable casing. Many applications in the field, or in classroom experiments.

200 Pound Electromagnet **D60,435** **$69.50**

HERE'S A MOST UNUSUAL MAGNET

Cow magnets allow farmers to trap metal in the stomachs of their cows. Smooth, cylindrical magnet; rounded edges. Each is 3" long with a ½" diameter. Lift capacity of 75 pounds. Package of two.

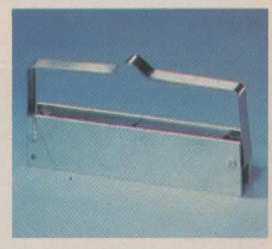
Cow Magnets
C31,101 **$12.50**



150 LB. LEVER-RELEASE MAGNET

A pull of your thumb releases a 150 lb. steel block with this quick cam-action lever. Made of rust-resistant plated steel with 3 precision-ground lifting surfaces & 2 ceramic magnets, it has a stainless steel handle & lift bale. 4½" x 1¼" x 3⅛".

Lever-Release Magnet
C42,447 **$39.50**

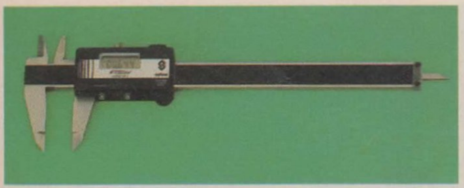


NINE OUNCE MAGNET LIFTS 95 POUNDS!

Two ceramic magnets are sandwiched between steel plates. Mounted metal handle features dent for attachment of retrieval line. Ideal for picking up ferrous objects. Palm-size.

95 Pound Lift Magnet
C42,095 **$16.95**

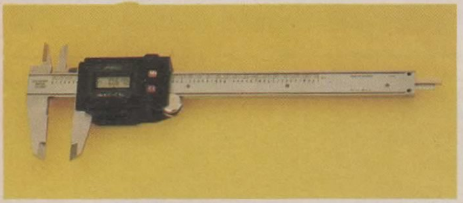
Calipers



SWISS ELECTRONIC CALIPER

LCD readout "Ultra-Cal" caliper from Switzerland. Outside, inside and depth measurements with precise resolution of 0.0005″ or 001mm. Switchable inch/metric with 6″ or 150mm range and 0.001″ (0.025mm) accuracy. Floating zero. Positive lock on/off and inch/metric switches. Weighs 5.3 ounces. 1.6″ (40mm) outside jaws. 0.700″ (18mm) inside jaws. Non-contact linear measuring system is insensitive to magnetic and electrical interference. With fitted case and batteries.

C35,303 $279.50



COMPUTERIZED CALIPER

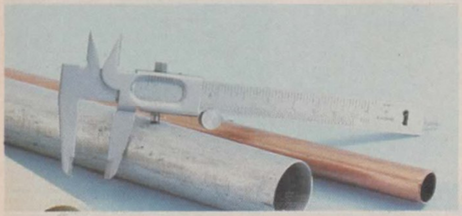
LCD display in inch (to 0.005″) and metric (0.01mm) measurements. Floating zero. Display hold function. 4-way measurement: outside, inside, depth and step work. Hardened stainless steel. Easy set upper and lower mode. 0.001″ (0.03mm) accuracy. 1.57″ (40mm) outside jaws. 0.670″ (17mm) inside jaws. Weighs 5 oz. Batteries included.

C35,302 $239.50

EXTERNAL MICROMETER CALIPER

Scherr-Tomico precision external micrometer with 0.25mm capacity. Heavy-duty cast machined frame with slight cutaway to facilitate measuring in narrow areas. O/A length of 5″. 0.01mm graduations. Unit supplied with adjustable spanner wrench. With storage carton.

Micrometer Caliper C35,117 $65.50

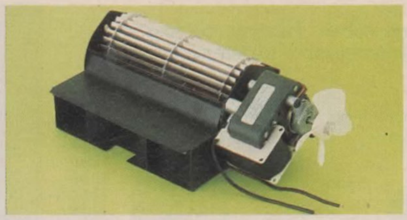


ECONOMY VERNIER CALIPER WITH INSIDE AND OUTSIDE JAWS

Steel construction caliper can make inside and outside measurements and depth measurements. Inch and metric scales. Graduated 1/16″ to 5″ and 1 millimeter. Reads to 1/25″ and 1 millimeter. Vernier scale for millimeters has 11 lines enclosing 10 spaces. Inch scale has nine lines enclosing eight spaces. Scale allows the finest divisions on the bar to be subdivided into tenths of a millimeter.

Edmund Vernier Caliper C40,598 $14.50

Fans



TANGENTIAL BLOWER FAN

Axial blower has 2″ diameter by 5¾″ long squirrel cage blade. Thermally protected 120 VAC drive motor. 60Hz. 89W. ¾″ high and 6¼″ long. New condition surplus blower.

Tangential Blower Fan	E35,115	$23.50
Speed Control	E34,760	$10.95

LARGE SQUIRREL CAGE BLOWER FAN

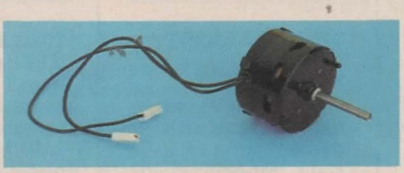
Universal electric blower fan has 3½″ cage blade. Motor body measures 3¼″D × 4″L with ¼″ shaft. Attached fan housing is 5″D × 2½″W with 2¼″ O.D. exit port. 115V, 60C, 1.0A, 3250 RPM. Thermal overload protected. 2 ft. lead wires. Weighs 4½ lbs. Black finish. Surplus, new condition.

3250 RPM Fan	E35,206	$43.50
Speed Control	E34,760	$10.95

BLOWER AND MOTOR ASSEMBLY

Enclosed blower and motor unit are housed in heavy white molded plastic with two 1⅜″ diameter outlets spaced 180 degrees apart. Air flow intake grill on bottom. Designed for base mounting. Two tapped holes on 10⅝″ centers. 100CFM at each outlet. 115V, 60Hz, 45W. With two-conductor AC cord and 5′ long plug. 4″ high, 11″ wide. New condition. Weighs 5 pounds.

E35,021 $16.50



NEW FAN MOTOR

3¼″ dia. black body, 2⅛″ thick. 5/16″ flatted shaft, 2¼″ long. Two No. 8-32 male mounting studs extend from motor face. Thermally protected. 72 amps peak. Surplus.

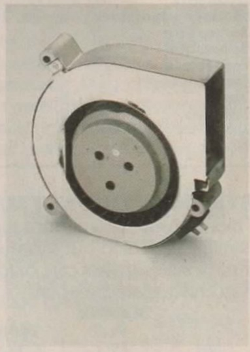
Fan Motor	E35,198	$17.50
Speed Control	E34,760	$10.50

SURPLUS BLOWER MOTOR AND FAN

Die-cast aluminum body with 5½″ x 5″ mounting face. Small plastic fan is attached to motor. 115 volts. 60Hz. 3,300 rpm. 50 Amps. 25CFM capacity. Eight predrilled mounting holes on face. Never used.

Torin Blower Motor E34,583	$24.50
Speed Control E34,760	$10.95

BISCUIT BLOWER FAN



Surplus 5″ diameter blower. Wire leads, all metal housing and three mounting holes. 115VAC, 60Hz, .26 amps, 22 watts, 1½″ thick. Originally used on copying equipment. Blows about 20 cubic feet per minute out the side.

Blower Fan E34,591	$26.50
Speed Control E34,760	$10.95

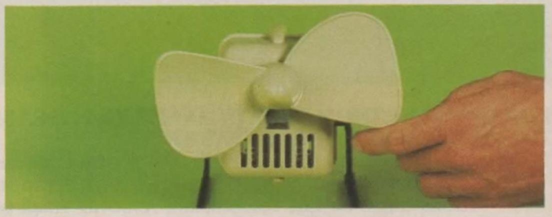
3″ OR 5″ SQUARE ELECTRIC FAN

Here's our latest surplus buy. It's a super quiet fan you can install in walls, equipment...anywhere you need cooling or exhaust. Made of metal and high quality with a whisper quiet motor. Originally manufactured for cooling computer motors. 45 CFM. 120V motor. Choose either 3″ or 5″ size.

Electric 5″ Fan	E33,196	$45.50
Electric 3″ Fan	E33,588	$41.50
Speed Control	E34,760	$10.95

ORDER FROM US DIRECT

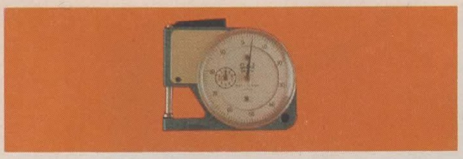
Efstonscience has only one location, and services all orders directly from our Toronto, Ontario premises.



DON'T TOLERATE HOT AIR. CIRCULATE IT

Powerflow soft blade fan circulates stale air out of your office or work station. Two-speed action. Super-hushed quiet operation. No vibration or dangerous blades. Rubber feet on stand to protect surfaces. Place it on the desk, night table or workbench. Costs just 4¢ to operate per 10 hour day. 7″ x 8″ x 5″. 240 cubic feet per minute output. 115V. 60Hz. 20 watt. With 8ft. cord. Beige. American made.

Soft Blade Fan E34,965 $56.50



HOW THICK IS IT? FIND OUT WITH THIS THICKNESS GAUGE

All metal gauge has a range of .500". Readings have a graduation of .0005". Includes permanent metric conversion chart, silver enamel. 2½" x 2" x 3/8". Gauge comes with plastic pocket case.

Thickness Gauge	C34,773	$156.50

THE MODERN SEXTANT

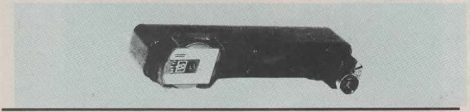
The navigational instrument which has kept captains on course for centuries is brought up to date. Large, easily adjustable mirrors have new instrument quality glass and a special baked-on salt-spray resistant backing. Mirrors have protective housings. Horizon mirror is half-silvered. Molded of high impact, weather-resistant plastic. No adjsutment wrenches required. Navigate the high seas.

Mark 15 Sextant	E34,835	$217.50

WATER-PROOF RANGE FINDER

This single scale model is pre-computed for direct readings; at 1,000 yds., it offers 90% accuracy. Includes a 6 x 28 mm detachable monocular, a 210' field of view @ 500 yards. (50 yard minimum distance usage). Less than 1% error @ 100 yards. Ideal for navigation in sight of shore line, hiking, or real estate work. Comes with carrying case. "in use" holster, and instructions. 1½" x 11". Weight 22oz

Rangematic	C72,326	$235.50
Rangematic Metric	C72,327	$239.50
Carrying Case for either	C49,432	$35.00



RANGING
100

OPTICAL TAPE MEASURE

Lets you measure distances from where you stand quickly and accurately. Simply sight object through viewfinder, turn dial until dual images merge into one, then read distance. Model 49,429 measures 6 to 100 ft. within accuracy of 99% up to 25 ft. and 97% up to 100 ft. Model 49,429 measures from 3 to 30 meters with same accuracy. Model 49,433 it is a larger size instrument for measuring 50 to 600 feet, with accuracy 99% at 100 ft.

Model 49,434 is the same unit measuring 15 to 180 meters of same accuracy.

Tapemeasure	C49,428	$79.50
Opti-Meter	C49,429	$79.50
Carrying Case	C49,430	$16.50
Ranging 600	C49,433	$159.50
Ranging 620	C49,434	$159.50
Carrying Case	C49,435	$31.50

HOW HIGH ARE YOU? ALTIMETER GIVES YOU THE ANSWER

Mount this handy altimeter on car or truck dash and always know the elevation anywhere from sea level to 15,000 feet. 2" x 2" altimeter has a built-in weather barometer to warn you of impending storms. Weighs less than four ounces. Includes a zippered vinyl carrying case. Can be mounted by means of self-sticking tape (included) or by using the pre-drilled screw holes. Registers in graduations of every 200 feet.

Pocket Altimeter	E34,544	$56.50

MAP MEASURE

Measure the distances easily and accurately, even on meandering trails and curved roads with Silva Map Measure Type 40. Provides direct readings in miles or kilometers. 1⅞" x 4⅝". Calibrated 1:24,000; 1:62,500; 1:250,000 miles and kilometers; inches for miles; and centimeters for kilometers. Stem hole for lanyard. Weighs one ounce. With carrying case.

Map Measure	C35,270	$18.50

GET THE PRECISE MEASUREMENT

CalcuTape is a 16 foot tape measure with a built-in calculator. 32 function converter lets you determine the precise measurement of that building project. Determine the pitch of a roof line, square footage and more. CalcuTape converts English to Metric, Diameter to Circumference, Yards to Meters and more. Steel tape. Plastic case. 2½" x 1⅓" x 3¾". Gray. Operates on two button-type batteries (included).

CalcuTape	E33,889	$139.50

READ ANGLES AND TRUE VERTICAL LEVELS

Unique Angle and Pitch Tool takes the guess work out of determining the slope of a roof or the grade of a walkway. Replaces bulky levels. Makes precision readings to 90° in any quadrant. Simply place meter on the surface to be checked. Sensitive to ½ of 1°. Tool has 3" edge which has a built-in magnetic base. Angle and grade chart is printed on the back. C49,202 $24.50

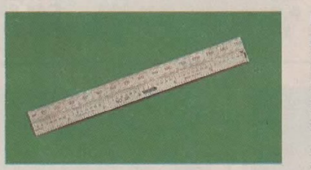
SPLIT IMAGE TRANSIT LEVEL AND INCLINE MEASURING INSTRUMENT

Amazing precision-engineered instrument combines a level and an incline measuring device in one handy unit. Indicate level and measure inclines to a fraction of an inch. Transit also indicates how much correction is needed. So precise that it can measure an incline at 25 feet and be accurate within the thickness of a dime. 5" x 2½" x 5". Weighs one pound. Black. With handy carrying case.

Split Image Transit	C34,182	$89.50
Abney Hand Level	C49,193	$64.50
Typographic Hand Level	C49,194	$118.50

POCKET TRANSIT

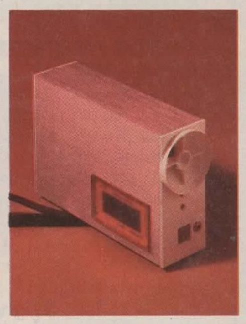
Widely used for reconnaissance and preliminary surveying on the surface and underground, for taking topography and for geological field work. Convenient size for portability. Transit is essentially a magnetic needle set in an accurately graduated circle in a case which opens into a versatile sighting arrangement. In addition, there is a level attached to a vernier for reading vertical angles. Transit also can be used as a prismatic compass, level, clinometer, plumb or Alidade. Scale in transit also shows grade in percent, graduated 0–100% in 5% divisions and numbered every 20%. E35,267 $249.50



OPTICIAN'S STEEL RULE

Use where precise measurements in either English or metric are needed. Chrome-finish, stainless-steel, 6" long, ½" wide. English: graduations in 32nds and 64ths. Metric: graduations in 0.5mms and 100ths. Flexible. Industrial grade. American made.

C35,321 $9.95

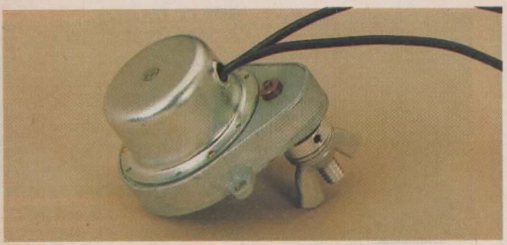


MAKE PRECISION MEASUREMENTS WITHOUT BULKY TAPES

SonicTape quickly reads distances up to 60 feet at the touch of a button. Accurate to within 0.01 feet. Tape operates on the principle of an inaudible sound signal which is emitted along a narrow beam and reflected back from a suitable surface to the unit. There, the signal is processed electronically with the distance shown on the clear LED display. Unit is precalibrated. Calibration can be adjusted in the field simply by adjusting a screw. Unit is powered by six "AA" cell Ni-Cad batteries or AC adapter (both are included).

Sonic Tape	E33,456	$429.50

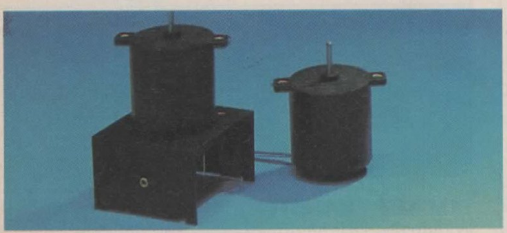
YOUR COMPLETE INDEX
IS ON PAGE 111



SPECIALTY MOTORS

Hubs on shafts to accommodate wheels with ¼" center holes. Features threaded shafts, wing nut, 6 ft. cord, plug, ccw rotation. 115V and 60Hz.

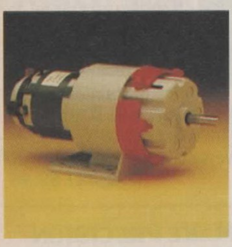
RPM	Number	Price	RPM	Number	
1	F60,734	$35.50	30	F60,763	$54.50
12	F60,714	54.50	60	F60,733	54.50
Motor Only					
1	F42,558	2 for $14.50	4	F42,293	2 for $24.50
Includes all features but threaded shafts.					
½	F60,791	$57.50			



HIGH TORQUE MOTORS

Excellent for visual effects projectors; powering models & displays. Slow speed, high torque DC gearheads. Each features long life, low current drain, reversible gear train; self-starting with built-in speed reduction gears. 10mA @ 12V. 1$\frac{13}{16}$". 3V motors have twist-on battery case, except F35,724. **$38.25 ea.**

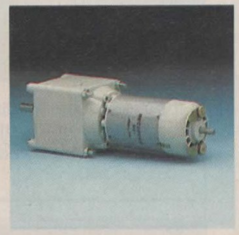
Speed (rpm)	Stall Torque (in.-oz.)	Number 12 Volt	3 Volt
1	65	C41,860	C41,327
2	31	C41,331	C41,861
7	12	C41,863	C41,862
16	5	C41,865	C41,864
30	2.4	C41,333	C41,329
115	0.8	C41,867	C41,866
4	18		E35,724



SIX SPEED GEAR MOTOR

Permanent flange mounted Monoperm DC high performance motor has six speed ratios—3:1; 6:1; 12:1; 16:1; 32:1 and 60:1. Forward, neutral and reverse switch. 4mm diameter output drive shaft. Six volt motor. Seven 4.2mm diameter and eight 2.3mm diameter connection flange holes. Adjust ratios by turning locking ring dial. Rugged plastic body. 2" x 2" x 4½". Weighs eight ounces. From West Germany.

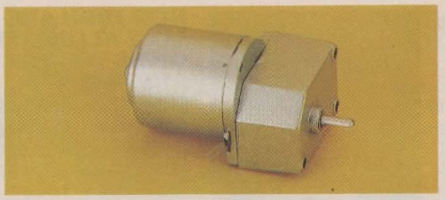
E34,503 $79.50



MOTOR REDUCER GEAR UNIT MOTOR

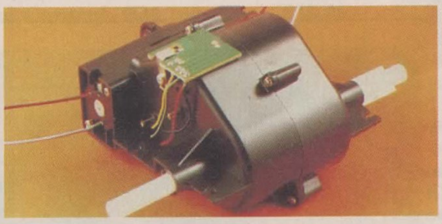
Motor driven gear reduction with 15 possible ratios from 3:1 to 360:1. Use screwdriver to change ratios. Supplied with four stages—3, 4, 5 and 6. 6 volt DC operation. West German crafted unit is 7" x 2$\frac{1}{16}$" x 2$\frac{1}{16}$". Weighs about one pound. ¼" diameter output shaft. Gray plastic and metal motor body. Versatile and efficient motor.

E34,505 $112.50



6-12V GENERATOR MOTOR

Miniature gear-reducing, hi-torque motor. 250 RPM output speed reversible by polarity change of input voltage. Output shaft: ⅛" diameter x ½" long with flat. 2" long x 1⅜" wide x 1¼" high die-cast gearbox. Torque: 6 ounce-inch. New. **E35,116 $16.50**



TINY ROBOT MOTOR!

Two 1.5 to 6VDC motors connected to a ⅜" x 1¼" axle, interfaced by a magnetic clutch. Reverse power, & axle segments cause "robot" to go backward or turn! 5" x 4" x 2¾" high.

Robot Motor	E31,827	$19.50
2 Motors	E31,827B	$34.50

NEW FAN MOTOR

Thermally protected motor 3¼" in diameter and 2⅛" thick. 120VAC. $\frac{5}{16}$" flatted shaft 2¼" long. Two No. 8-32 male mounting studs extend from motor face. 0.72 amp maximum draw. New condition. Black.

Fan Motor	E35,198	$16.95
	E35,198B 2 for	$32.50

REVERSIBLE DRIVE MOTOR

Our fine drive motors feature forward & reverse switches. High torque with drive wheel. 20rpm on 4 "D" batteries. 5½" x 4½".

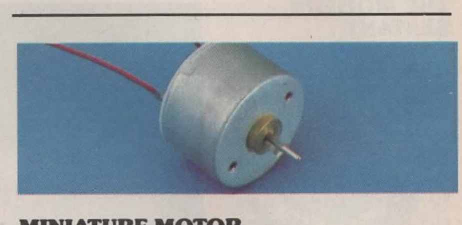
Reversible Drive Motor	E72,379	$24.50
2 Motors	E72,379B	$43.50

YOUR COMPLETE INDEX IS ON PAGE 111

HIGH TORQUE MOTOR

Single shafted motor designed for 24V cassette decks. Able to meet a variety of needs! No-load speed is 7000 rpm at 24V with 4.6 oz./in. torque. Current: 6mA. 26mm x 29mm.

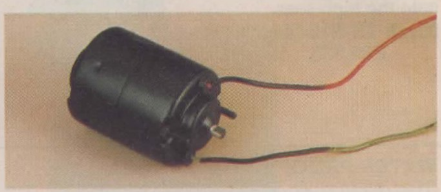
High Torque Motor E42,543 $31.50



MINIATURE MOTOR

High quality motor is only 1$\frac{13}{32}$" x 1¼". Features spring bronze brushes and self-aligning bronze bearings. Uses 0.35-1.5V. 0.078" shaft extends $\frac{7}{16}$" min. 25mA. **D40,872 $10.95**

3 or more



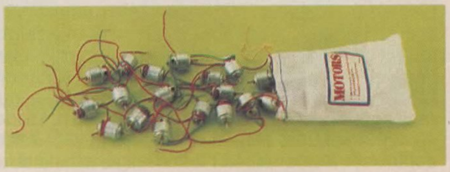
14V 3AMP SPLIT SERIES MOTOR

This 13,500rpm motor features sintered bronze bearings & a steel thrust blade. Also has a ½" dia. shaft and 16 gauge wire leads. 4" long. Weighs 1½" lbs. **E61,085 $19.50**

SPEED CONTROLLED MOTOR

1" x 2" motor switches off when it reaches speed & on when it slows below threshold. 12 VDC unit with 10 to 50 ohm resistor. Permanent magnet provides plenty of torque. Shaft is $\frac{3}{32}$" x ½". With brass pulley & rubber grommet. 2000rpm.

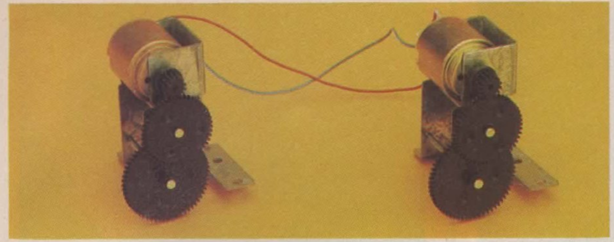
E33,601 $14.50



MOTORS BY THE BAG

Versatile 1" motors with ⅜" long shafts and two wire leads. For hobbyists, science fair projects, demonstrations, experimentation, etc. Bag of 20 motors.

Bag of Motors	E1304	$24.50
Bag of 10 Motors	E1304A	$12.95

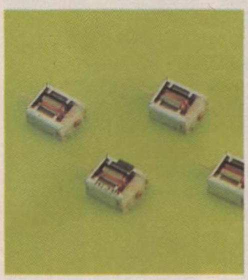


MINI ELECTRIC GENERATOR DEMONSTRATOR

Two DC motors (1.5V — 3V) with metal frame and plastic 3-gear train. Wire the two assemblies together and you have a slave and driver combination. Spin the large gear of driver and it generates enough current to power the slave. Ideal demonstration device or robot component. Motors measure approx. 2" × 2" × 2½".

Slave/Driver	E34,763	$19.50
	E34,763A 4 Motors for	$37.50

YOUR COMPLETE INDEX
IS ON PAGE 111

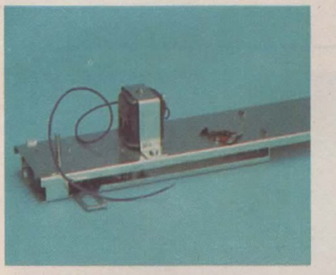


ULTRA MINI MOTORS

Surplus motors originally were designed to advance the film in disc cameras. 3 Volts 200ma 7,500 RPM. For hobby projects, toys, etc. Package of five motors.

Ultra Mini Motors

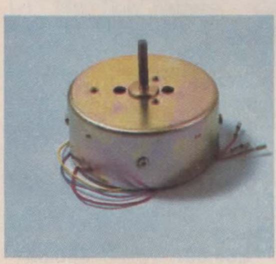
E35,128A	$5.95
E35,128 5 Motors for	$18.50



GEAR TRAIN DC MOTOR

Permanent magnet-type motor with copper brushes and communicator. 300:1 reduction ratio. 0.117" dia. output shaft. 10 RPM at 1.5V; 20 RPM at 3V. 2 leads. Cadmium plated. 7⅝" x 2⅙" upper face. 5½" x 1 3⁄16" lower face. Package of 2. Surplus.

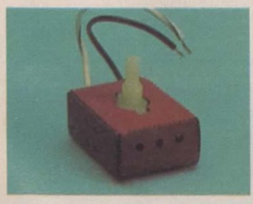
E60,989 $13.75



VARI-SPEED LEAR- JET MOTOR IS POWERED BY SOLAR CELLS OR BATTERIES

Four brush DC motor runs 4 to 12V, draws 100 ma. 3" in diameter. 1½" high. Shaft is 1⅛" L × 3⁄16" dia. Powered by batteries or solar cells. See page 86 for solar cells and panels.

E34,065 $19.50

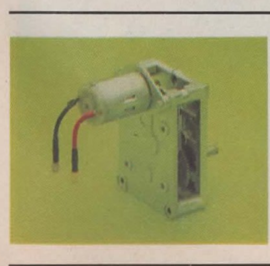


MOTOR SPEED CONTROL

Used to vary the output of blower motor fan blades. Surplus product. Rated by manufacturer at 120V, 60Hz, 1.6A, 6 LRA. 6" wire leads. No knob is included but control can be turned as is or will accept a standard electrical rotary knob.

Motor Speed Control

E34,760 $10.95

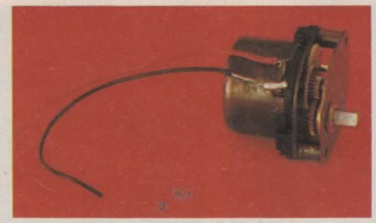


SURPLUS 12V MOTOR

High Torque 12V DC motor. 32 RPM. Gear ratio: 124:1. Surplus find. RPM on outer dimensions.

12V DC Geared Motor

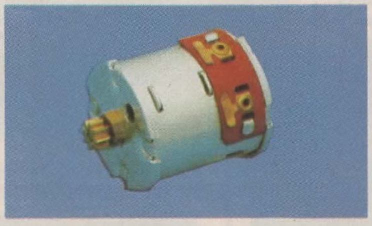
E34,761 $24.50



MICRO GEAR MOTORS

Micro-size motors (⅝" in diameter and ¾" long) were originally designed for a camera shutter control 6VDC rating with 300 RPM and 20 CM-grams torque. ⅛" diameter by ⅛" long flatted shaft. Begin to run at only 1½ volts DC. Perfect project motor for home-made gadgets of all sorts, window displays, robotics, toys, games, etc.

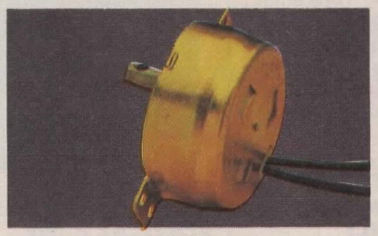
Micro Motor E35,386 $8.95



SURPLUS MOTORS

1.5V with 670mA, 5 gr-cm load and 3950rpm. Spring steel brushes, fiber washers, brass brushings. ⅛" shaft. Pkg. of 12. ⅞" x 1¼".

Surplus Motors	$3.50
C61,077A 10 for	$25.50

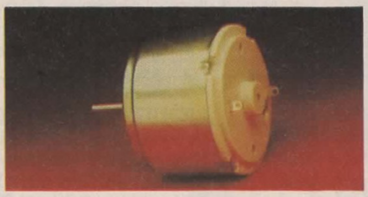


SURPLUS TIMING MOTORS

Six piece assortment of timing motors with various RPM's. All have wire leads; some have gears. Excellent for use in projects when only low RPM's are required. Great surplus bargain.

Timing Motor Assortment

E35,725 $21.50

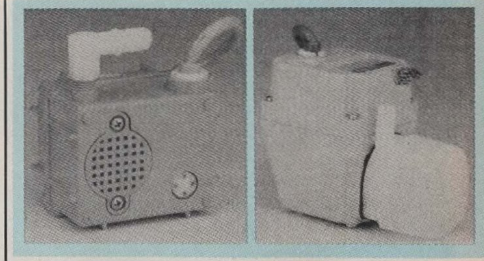


REVERSIBLE MOTOR

Originally designed for use in a video disc player. Can operate up to 20 VDC without overheating. Draws 280mA stall current. Rated life of 5,000 hrs. Sleeve bearing shaft, .62" long. .078" stainless steel shaft. Torque @ 12 VDC, 0.3 oz-in stall, running torque 0.2 oz-in or better. Lug terminal connectors. Weighs 8 ozs.

Reversible Motor

E33,586 $9.50



SMALL SUBMERSIBLE UTILITY PUMPS

Little Giant Submersible Pumps operate when completely submerged. Because they are hermetically sealed, motor windings can never become wet. All die cast aluminum pumps are covered with a corrosion resistant coating. Each is filled with a special oil that provides lifetime lubrication and rapid dissipation of heat through housing. Designed for liquid transfer or circulation of water, non-flammable light oils and mild liquids. All are U.L. listed and each has a 6' cord with 3 prongs.

Small Pump: 3⅞"H × 3⅝"L × 3"W, can be set on any of five sides, impedance protected, 1⁄160 H.P., 0.5A, 30W, ¼"MNPT discharge, 2.1 pounds weight.

E36,414 $87.50

Medium Pump: 4½"H × 5½"L × 3½"W, thermally protected, 1⁄40 H.P., 1.7A, 100W, ¼" MNPT vertical discharge, 4.1 pounds weight. E36,415 $112.50

		Gallons Per Hour				
	PSI	1'	3'	4'	6'	Shut-Off
Small	2.0	120	70	40	—	4.6
Medium	5.1	300	255	230	185	11.8

LITTLE GIANT WATER WIZARD

Completely portable and easy to use. Just attach a garden hose or 1" pipe, set the pump into water at least ¾" deep and plug into a grounded 120 volt AC outlet. The Water Wizard will remove water to within ⅛" of floor. 8 ft. cord with 3-prong grounded plug. Max. pumping height 26.3 feet. Thermally protected. 7¾"H × 4 5⁄16"W × 6⅙"L. Garden hose adapter included. U.L. listed, weighs only 7 pounds. ⅙ H.P., 5.0A, 380W, PSI 11.4.

Gallons Per	1'	5'	10'	15'	20'
Minute	20.4	19	16	13	8
Hour	1225	1150	960	780	480

E36,416 $159.50

Convert Water Wizard to Automatic Operation. 115V, 10A with 10 ft. cord, U.L. listed. On Level 7⅜" + ⅜", Off Level ¾" + ⅜". Remote switch. E36,417 $69.50

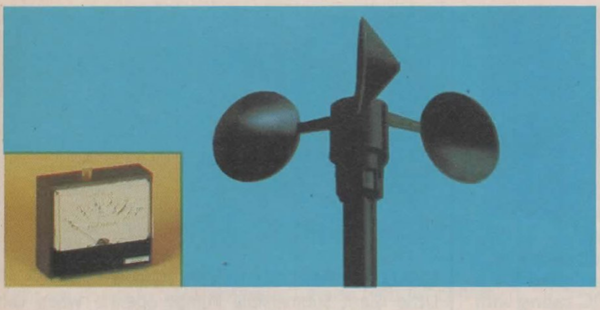
DOUBLE VITON SEAL ACID PUMP

Designed for transfer of weak acids, chemicals, fruit-juices, cleaning solvents, anti-freeze, potable fluids, solutions with pH factor 6-7. Non-submersible, inner and outer seal with stainless steel plate and motor shaft. Nylon front with ⅜" FNPT intake. Adapter included for ½"O.D. intake, ¼"MNPT discharge, 6' cord with 3 prong plug, thermally protected, weighs 5.4 lbs, 1⁄40 H.P., 1.7A, 100W, 4½"H × 5½"L × 3½"W.

	Gallons Per Hour				
PSI	1'	3'	4'	5'	7'
5.1	300	255	230	205	160

E36,418 $197.50

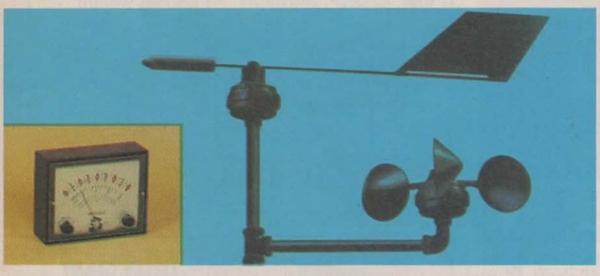
Wind Speed Indicators



SELF-GENERATING WIND SPEED MONITOR NEEDS NO BATTERIES OR AC POWER OUTLETS TO FUNCTION

Measures wind speed from 0-100mph and from 0-88 knots. This indicator keeps working, even under severe conditions. Kit includes an outdoor, self-contained generator for meter mounted in a wooden case (4″ x 10″ x 12″), 60 ft. of connecting wire and instructions.

Self-Generating Monitor C72,131 $129.50



PROFESSIONAL WIND MONITOR FOR HOME OR WORK. TWO WIND VELOCITY SCALES FOR PRECISE ACCURACY

Perfect for wind monitoring at home, office, farm, marina & airport, this precision unit mounts on roof, flagpole, barn, antenna, etc. with standard hardware. Easy-to-read indicator gives both wind speed & direction on one dial. 2-speed ranges; 0-25mph & 0-100mph, assure precise accuracy. Attractive, mahogany finished indicator; 6⅜ x 5⅛″; mounts indoors. 24″ high transmitting unit can be located up to 2,000 ft. away. All outdoor components are corrosion resistant for long life & trouble-free, reliable operation. Uses "D" battery (not incl.). Has 60 feet of weather-resistant cable.

Professional Wind Monitor C70,310 $479.50

HANDHELD ANEMOMETER HAS A COMPASS BUILT RIGHT IN

The compact 7½″ high lightweight (1 lb.) unit is sensitive enough to catch a 5mph breeze yet rugged enough to read a 70mph gale. It's accurate to 3% of full scale. Self-contained, it requires no batteries, adjustments or recalibration.

Anemometer D42,547 $99.50

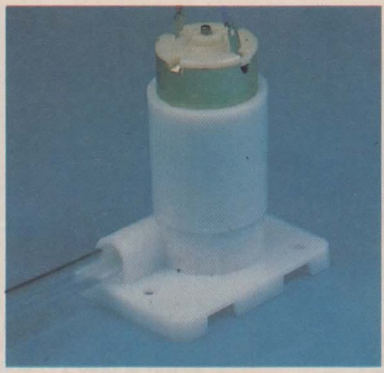
Turbo Meter

TURBINE WIND SPEED INDICATOR IS POCKET-SIZE

Based on the principle that a freely turning turbine will rotate at a speed directly proportional to wind speed. Sapphire jewel bearings. Measures miles per hour (0-99.9), knots (0-87.9), feet per minute (0-8790) and meters per second (0-44.8). 3% or better accuracy. 1.16″ x 2.6″ x 4.65″. Weighs 3 oz. Operates in temperatures from 32° to 122°F. Takes 3 "AAA" batteries (not included).

Turbo Meter
E34,793 $219.50

Pumps



THE PERFECT MINIATURE PUMP

For photography darkrooms, science fairs, table fountains, moving water displays. Pumps up to 1 pt. per minute with 12″ high flow. Can use this handy pump in either direction. It is self-priming; uses 1½ to 3VDC. Operates on two flashlight batteries and runs up to 48 hrs. before a battery change is needed. 4″ tube included.

Miniature Pump E50,345 $16.95
E50,345A 2 For $30.50

HIGH CAPACITY, LOW COST VERTICAL PUMP

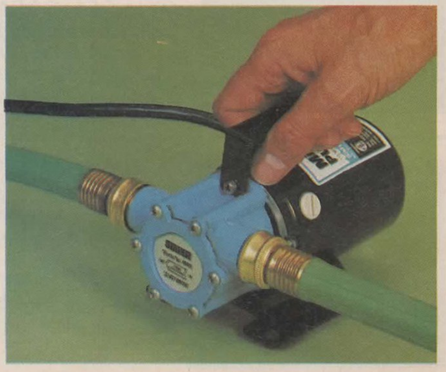
This compact, general use vertical pump comes complete with an air-cooled, heavy-duty motor. It's perfect for use in evaporative coolers, laboratory liquid transfer and moving water displays. Pumps three hundred gallons per hour one foot high or two hundred and thirty-five gallons five feet into the air. It delivers 3.7 psi maximum. Weighs only 2.14 pounds. Comes complete with a thirty inch cord, two leads and is equipped with a hose adapter. 115VAC 60 Hz.

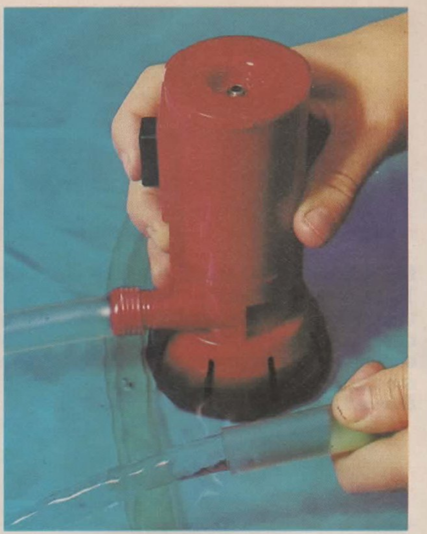
Vertical Pump C71,599 $59.50

LIQUID HANDLING SYSTEM WITH INSTANT SELF-PRIMING

This rugged instrument pumps 350 gallons per hour and lifts most liquids 20 feet high or pushes up to 50 feet! Pumps out basements, swimming pool covers, boats, septic tanks or fills stock tank reservoirs, etc. Plugs into any 115 VAC outlet and has a grounded power cord and overload protection. Handles water, milk, brine, etc. (not for use with gasoline, solvents or acids). With motor/pump, two hoses, power cord and strainer.

Self-Priming Pump
C71,440 $169.50

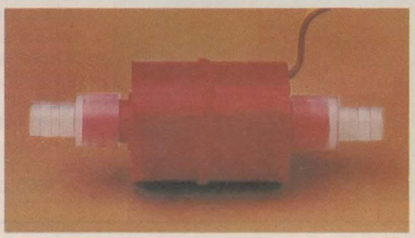




COMPLETELY SUBMERSIBLE POCKET SIZE PUMP, PUMPS 55 GALLONS IN 20 MINUTES

Solve your water removal problems instantly with this lightweight hermetically-sealed pump. It will drain waterlogged boats, flooded roofs, clogged sinks, fountains, aquariums, etc. quickly. Only 5¾″ tall with an acid resistant case designed for safe low voltage. Worry-free handling. Powered by two rechargeable NiCad batteries, and a UL CSA listed battery charger is built in. Adapter for recharging is included.

Insta Pump E31,097 $109.50



RECIPROCATING SUBMERSIBLE PUMP

It operates underwater on 12VAC to 20VAC. Lifts 1 pt. per minute at 12 in. head (on 20VAC) and pumps a steady fountain-like stream of liquid over 30 inches high on 20V (with recommended 3⁄64″ nozzle). The plastic, waterproof case is 2½″ x 1″ diameter. Weighs only 1¼ oz. With care, requires no servicing.

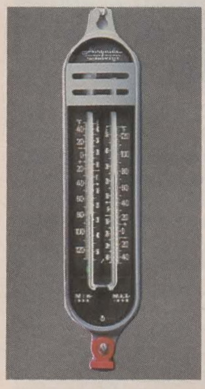
Submersible Pump
E60,307 $48.50

OUTDOOR
INDOOR
74.0 F
DIGITAL THERMOMETER

HOW COLD IS IT OUTSIDE?

Set this Hi-Tech marvel near a window (can be wall mounted) and extend the 5 ft. wire sensor out the window...close the window...and read the temperature. Flip the switch for the temperature inside. Operates on one 9V battery (not included). Gives reading (+ −1°) for −40°F to 199°F temperature range. 2″ x 3″ x 1½″.

Digital Thermometer E34,005 $49.50

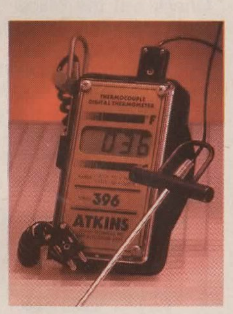


MINI/MAX THERMOMETER OFFERS PRECISION MONITORING

This self-registering unit gives the lowest, highest and current temperature. It shows temperatures in 2° increments ranging from −40° to 120°F. With sturdy plastic case, mounting hardware & resetting magnet. 2½″ x 10½″.

Mini/Max
C71,478 $24.95

HAND-HELD DIGITAL THERMOCOUPLE THERMOMETER



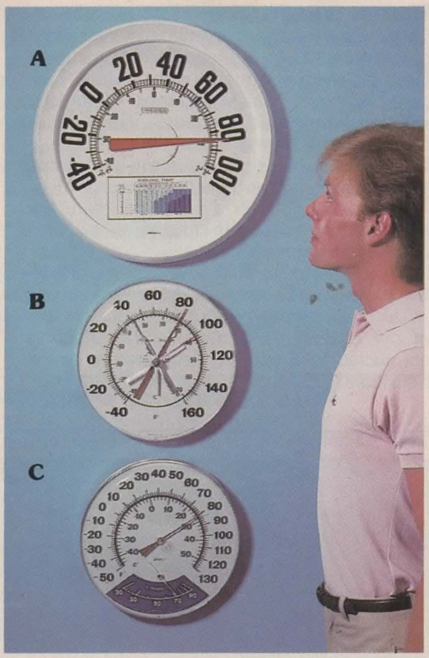
Readings are accurate to 1%. Range of −25° to +500°F and −32° to +260°C. LCD display. 1,000 hour battery life. Low battery warning. Housing is 3″ x 5″ x 1½″ with cushion-protected edges, probe holder and back strap for wearing on belt.

Thermocouple Thermometer	C33,082	$223.50
Surface Temperature Probe	C33,083	$109.50
Bar Tip Probe	C33,084	$ 29.50
Connector	C33,085	$ 9.50

DIGITAL THERMOMETER GIVES FAST, ACCURATE READINGS IN FAHRENHEIT OR CELSIUS

Bright red LED display. Fast-acting probe on coiled cord. Integrated probe holder. Needs no recalibration. Accurate to within ±.2F or ±0.1C. 2½″ x 2″ x 5″. Weighs about 1 lb. Powered by one 9 volt cell. With carrying case.

Digital Thermometer C34,286 $242.50



THESE THERMOMETERS LET YOU SEE THE TEMPERATURES EVEN AT A DISTANCE. IN THREE SIZES

(A) Giant 18″ thermometer delivers accurate readings in Celsius or Fahrenheit. White dial and frame. −40 to 100 F. range; −40 to 40 C. range. With wind chill chart.

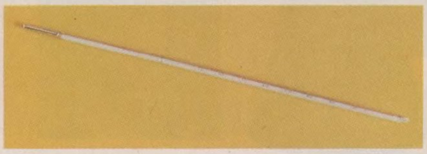
18″ Thermometer E34,040 $45.95

(B) Minimum-maximum thermometer with 12″ dial indicates lowest and highest temperature of the day. Steel and aluminum construction.

Jumbo Mini-Max E72,467 $45.95

(C) 12-inch thermometer gives temperature and humidity level at a glance. Metal frame with attached hanger.

12-Inch Thermometer
E72,468 $45.95



HIGH QUALITY LABORATORY THERMOMETER

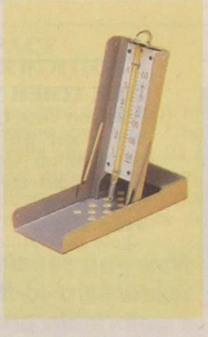
Partial immersion thermometer. Unit has white background with mercury in glass. Length is 300mm. Temperature range is from −20 to 110 degrees Celsius and is graduated at every degree. Accurate. Budget priced.

Lab Thermometer	C71,776	$11.95
	C49,631	$19.50

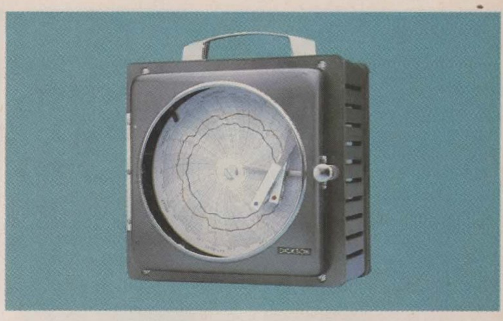
THIS THERMOMETER MONITORS OVEN TEMPERATURES

Records temperatures 100° to 600° in 25° increments. 5″ x 2″ x ¾″.

E31,811
$43.25



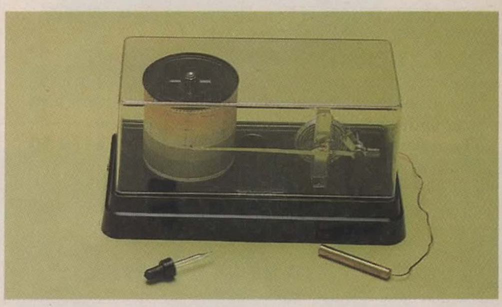
ORDER BY PHONE
416-787-4581



SETTLE DISPUTES ABOUT OFFICE TEMPERATURE ONCE AND FOR ALL

Self-contained portable recorder provides easy-to-read 7-day records of temperature and humidity variations in any room. Determine for yourself just how hot or cold a room is before investing in expensive heating and cooling work! Minicorder chart notes temperature ranges between 20° and 120°F. Self-contained quartz movement. Housed in a metal case. Battery powered.

Temp./Humidity Recorder	E35,022	$845.00
Temperature Only Recorder	E35,350	$345.00
100 Charts For Above	E35,150	$24.50

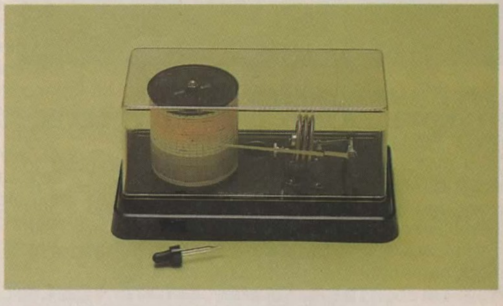


OUR RECORDING THERMOMETER MONITORS TEMPERATURE VARIATIONS WITH ACCURACY!

Instantly responds to temperature variations. Records −40° to 120°F. Comes complete with 13 weekly charts, ink and directions. Measures 12½″ × 6½″ × 6½″.

Recording Thermometer	C70,312	$498.50
52 Extra Charts	C90,045	$19.50

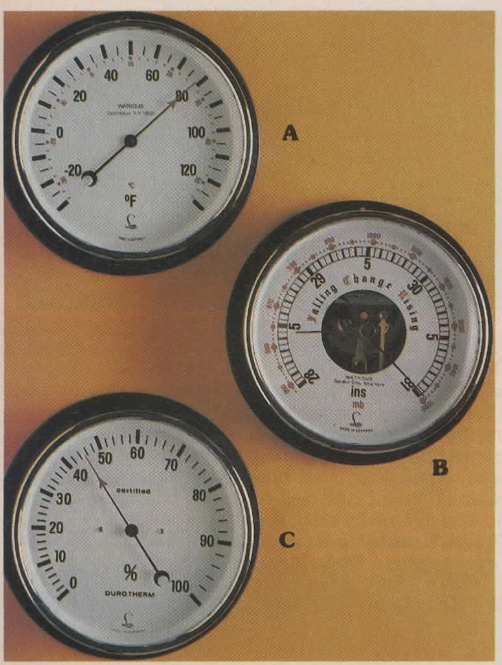
YOUR COMPLETE INDEX IS ON PAGE 111



PRECISION BAROMETER REGISTERS PRESSURE CHANGES INSTANTLY!

This instrument combines a universal altitude range and magnified pointer motion for instant response to pressure changes. Responds with practically no observable lag when pen motion changes. Range of mercury is 29″ to 31″. Operates effectively from sea level to 10,000 feet. Easy to read, 3¾″ high chart drum runs on 115VAC, 60Hz clock drive. With year supply of color-banded weekly recording charts, instructions. 12½″ × 6½″ × 6½″.

Recording Barometer	C70,600	$498.50
52 Extra Charts	C90,044	$19.50



LUFFT INSTRUMENTS...PRECISION WEST GERMAN CRAFTSMANSHIP

A DIAL THERMOMETER

Keeps tabs on the temperature from 30° to 130°F. Measures in 2° increments. Black satin aluminum case with chrome bezel ring. 6″ diameter.

Thermometer	E61,135	$179.50

B CLASSIC MARINE BAROMETER

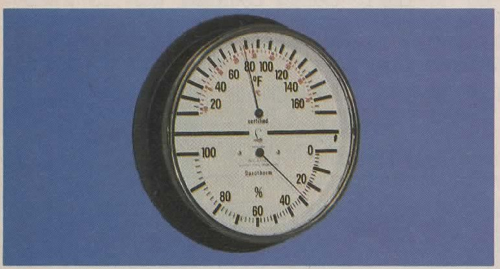
See relative humidity readings at a glance through crystal cover. Black satin aluminum case with chrome bezel ring. 6″ diameter dial.

Barometer	E31,226	$224.50

C HIGHLY SENSITIVE HYGROMETER

Measures relative humidity in home or office. Comes in handsome black aluminum casing which accents any room. 6″ diameter.

Sensitive Hygrometer	E61,136	$224.50



LUFFT THERMOMETER AND HYGROMETER OFFERS HUMIDITY LEVEL AND TEMPERATURE AT A GLANCE

Dual instrument features a precision hygrometer to measure humidity and a sensitive thermometer. Enables you to monitor your environment and adjust humidifier or heater to your comfort. 6″ diameter. Both F and C scales. Precision West German craftsmanship. Black aluminum case with baked white dial.

Hygrometer/Thermometer	E61,137	$224.50

HUGER WEATHER INSTRUMENTS

Large, easy-to-read instruments deliver accurate reports of atmospheric conditions. West German precision-made instruments. Elegant black metal finished frames. White face with black numerals and letters. Glass dial is 3½″ diameter. Frame is 4⅞″ diameter.

Barometer. Measures change in barometric pressure in inches and fractions thereof. Measure the change over a set period with the built-in pointer. Adjustment screw and mounting hole on back.

E35,312	$79.50

Hygrometer/Thermometer. Hygrometer measures relative air humidity by means of the coating on a metal spiral which is connected to a pointer. Temperature gauge measures in Fahrenheit. With mounting hole.

E35,313	$68.50

Weatheralert

WEATHER FORECASTER BY WEATHERALERT™

Forecaster is tuned into the National Weather Service's chain of weather stations. Unit picks up stations, which serve most of the country, up to 50 miles away. Crystal controlled switch selectable tuning system. 2¼″ full fidelity speaker. 25″ telescoping antenna. LED battery indicator. Slide volume control. Two tone high styrene case. Takes one nine volt battery (not included). Typical weather service information includes the day's forecast, the advance forecast, the previous day's high and low temperatures, rainfall and advance warning of storm conditions.

Forecaster	E33,658	$89.50

Digital Rain Gauge

COLLECT AND MEASURE RAINFALL AUTOMATICALLY

Sturdy, weather resistant digital rain gauge lets you complete rainfall statistics for hour, day, week or month. Measures rainfall in tenth's of an inch. Registers up to 999.9″. 6″ x 5½″ x 2¾″ gauge mounts easily on fence, roof, platform. Includes 30 feet of weatherproof cable. Operates on one 9V battery (not included).

D72,165	$119.50

1/100″ Calibrated Rain Gauge. Same features as above but with 1/100″ calibration to 99.99″.

D72,319	$162.50

THIS HANDY BAROMETER SITS ON YOUR DESK

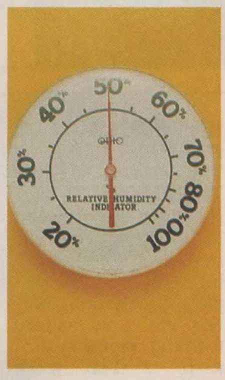
Barometer is calibrated in inches, centimeters, and millibars of mercury. Measures air pressure changes to predict weather changes. Gilded case has a four inch silver dial with black numerals and gold set hand.

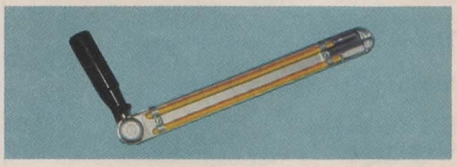
Desk Barometer	E41,951	$45.50

WATCH THE HUMIDITY AT YOUR OFFICE OR PLANT!

Check out the office and production areas for water vapor that can ruin merchandise. Twelve-inch dial hygrometer can be used indoors or out. Instrument comes calibrated.

Hygrometer	
E33,413	$38.95

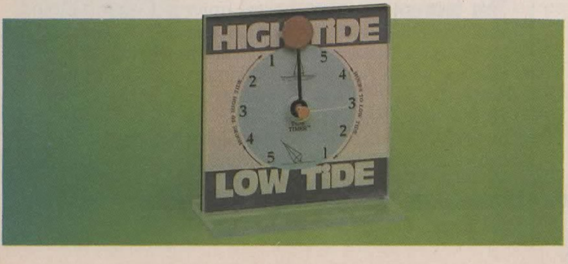




SLING PSYCHROMETER ACCURATELY MEASURES HUMIDITY

Compact and sturdy. Excellent for lab use. Contains two mated 9″ thermometers. 10° to 110°F. ½″ divisions, mercury filled; in aluminum frame with "sling" handle. Bulbs partitioned. Measures 10¾″ x 1⅜″. Includes Weather Bureau Psychrometic Tables.

Sling Psychrometer	C71,477	$59.50



TIDE TIMER TRACKS TIDES

Precision West German (Junghans) quartz movement clock tracks tides for you. Blue and white unit, 6″ x ½″ x 6″. Powered by single "C" cell battery. For use along Atlantic coast, set once at new or full moon. Computer generated starting tables are provided for use along the Pacific coast, where tides are irregular due to ocean size. Not for use along the Gulf of Mexico. With instructions.

Tide Timer	E35,261	$96.50

Now you can find in our catalogue and at our retail store, many unusual but useful hard-to-find items to make your work, your home, your life, more easy, comfortable, and enjoyable.

RainWise
NORTH
4.8

THE DIGITAL WEATHERSTATION™.....FOR THOSE WHO TAKE WEATHER WATCHING SERIOUSLY

Computer-age design weather station monitors nine different aspects of the weather— from current temperature to barometric pressure— and calculates heating and cooling degree days to allow you to devise your home energy plan. Microprocessor controlled unit is easy to install and is designed to give years of accurate, trouble-free operation. Rooftop mounted unit gives you the following data:

—Windchill readout in F° or C°.
—Rainfall measurement in 0.01 of an inch.
—Relative Humidity shown in percent.
—Degree Days for cooling.
—Degree Days for heating.
—Inside Temperature in F° or C°.
—Outside Temperature in F° or C°.
—Barometric Pressure. Has max/min recall.
—Wind Direction in 10 degree increments.
—Windspeed With Maximum Gust. Scales in MPH, KPH or Knots.
—The Time, Date, Month and Day.

An auto select function provides four second readout of each function in sequence. LED 3/4" display. Station is constructed of top notch components. Precision ball bearings are used in both the wind directions and wind speed sensors. A synthetic hair hygrometer is used to gather relative humidity data. The barometer is an aneroid device, mounted in separate housing. The rain gauge is self-emptying and conforms to National Weather Service standards for accuracy. Unit mounts easily on a TV antenna or other vertical pipe by means of a U-bolt mount. Monitoring unit can be mounted on any wall or placed on a flat surface. Measures 17½" x 7" x 1½". Walnut frame with brushed aluminum panel. Includes connecting cable.

Digital Weather Station
C34,532 $1595.00

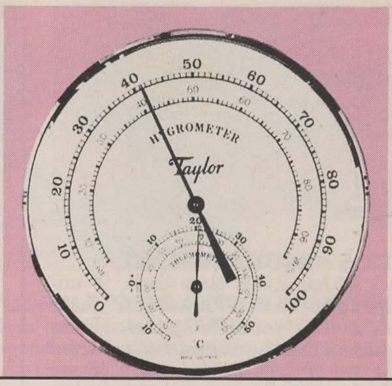
Extreme care is given to each order we receive. It will be checked and re-checked to insure its safe arrival. But, if damage or discrepancy should occur, Call: (416) 787-4581

DIAL HYGROMETER AND THERMOMETER

Direct reading % relative humidity incorporating a quality synthetic hair hygrometer plus dial thermometer. Fully ventilated steel case with chrome bezel and glass crystal. White dial with black numerals. Scale Ranges: 10% to 90%; Temperature: -15° to 55°C and +8° to 130°F. Dimensions: 5½" diameter; ¾" thick; Weight 300 grams.

C49,464 $69.50

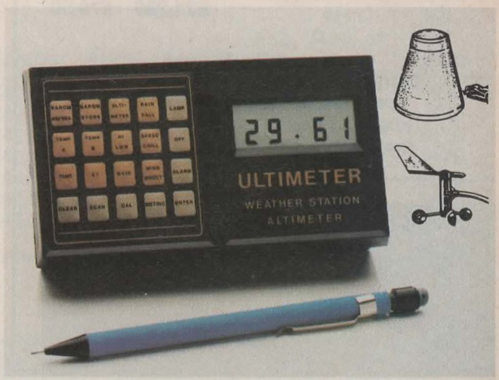
There is a wide variety of weather instruments available through our facilities. Only lack of space does not allow us to publish more. If you require any other weather related instrument, please inquire with us, we may have the best answer for your needs.

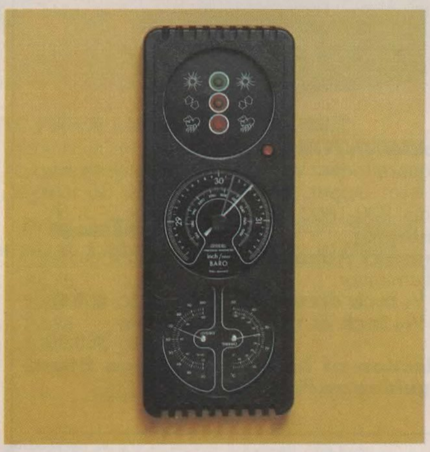


TAKE WITH YOU WEATHER STATION

Compact 2⅞" x 5" x 1¼" computerized instrument combines an unusually complete weather station with an electronic altimeter. Altitude is displayed in 10 foot increments from below sea level to 21,000. Station functions as a precision barometer, thermometer, day and date quartz clock and stop watch. Using remote sensors, station also can indicate wind speed, wind direction, daily rainfall, cumulative rainfall and remote temperature. Displays readings in English or metric. With remote temperature sensor, AC adapter and manual. Station operates from AC adapter, AAA Ni-Cad batteries (not incl.), or car cigarette lighter adapter (not incl.). Weighs 4 oz. without power source.

Complete Ultimeter Weather Station C35,353 $739.50
Ultimeter Weather Station And Altimeter C35,320 $395.50
Anemometer/Wind Vane C35,351 $246.50
Rain Gauge C35,352 $109.50





INSTANT WEATHER REPORTS

Determine the atmospheric conditions where you live with this finely crafted West German-made weather station. Indoor station delivers a reliable account of today's atmospheric conditions and an accurate prediction of tomorrow's outlook. Color-coded lights indicate air pressure tendency. Station also includes a barometer, hygrometer and thermometer. Black plastic frame, 11⅝" x 4½" x 2". 3⅜" dials. Air pressure indicator requires one 9V battery.

Weather Station E42,724 $136.50

HYGRO
BARO
THERMO

STAY ABREAST OF THE WEATHER AND THE CHANGES AHEAD WITH HUGER'S OUTDOOR MONITORING STATION

Precision station from Huger provides the necessary atmospheric information necessary to devise your own forecasts. West German-crafted station includes a hygrometer for measuring relative air humidity, a thermometer with readings in both Celsius and Fahrenheit and a barometer for determining changes in atmospheric conditions. Instruments are housed in weather-resistant brushed aluminum finish 15⅜" x 7⅛" frame. Instruments have 3⅜" dials, black background, white letters and numerals and glass covers. Delivers accurate forecasts of the conditions, both today and what's ahead. Frame has four pre-drilled mounting holes. Barometer has sensitivity adjustment screw.

Huger Outdoor Weather Station E35,311 $247.50

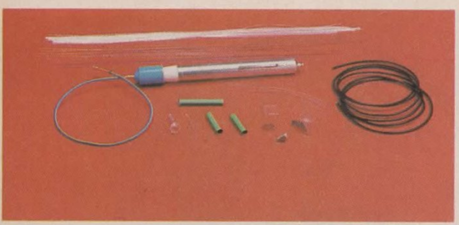
EFSTONSCIENCE INC.
Science & Technology Agora

COMPUTEMP III—A COMPACT COMPUTERIZED WEATHER STATION FOR HOME OR OFFICE

Computemp III's large red LED readout alternately monitors indoor and outdoor temperature and time. Choose Fahrenheit or Celsius display, or both alternating. 24 hour memory stores the day's high and low readings and the time they occurred. A 30-foot outdoor sensor monitors air, soil or water temperature, while a 6-foot indoor probe senses air or spa water temperature. Set alarm to sound when temperature reaches a desired level. Also an alarm clock with snooze setting. 6½" × 2¾" × 4½". 120 volt. UL listed.

Computemp III D61,236 $139.50

COMPUTEMP 3

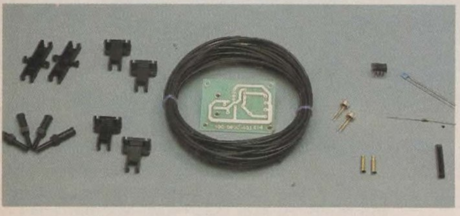


FIBER OPTICS ASSORTMENT KIT

Experimenter's kit has 2,000 glass fibers, 9″ unjacketed 2.5 mil fibers (about 600), twelve 6″ plastic 20 mil fibers, 5′ x 0.087″ coil of PVC jacketed fibers & 1 ft. light guide. Heat-shrink tips; 1½″ coherent rod; 1½″ glass rod; 5″ polished face plate, image stone; penlight & adapter.

E71,285 $79.50

Extreme care is given to each order we receive. It will be checked and re-checked to insure its safe arrival.



FIBER OPTIC TECHNOLOGY KIT

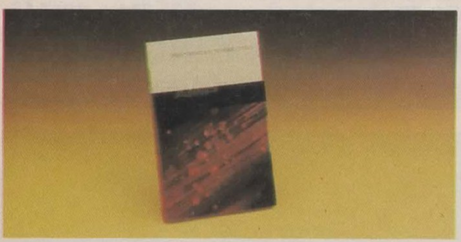
For researcher, experimenter, student, to build prototypes of fiber optic systems. Kit enables you to build very low cost "active link." Kit features active dry non-polish connectors, Honeywell active device module, five meters of f.o. cable, active device mounts and Designer's Guide to Fiber Optics. Explore the technology of electro-optic systems. **E34,530 $174.50**

FIBER OPTICS IDEA BOOK

FIBER OPTICS IDEA BOOKS

Gives over 100 exciting design and application ideas for fiber optics. Includes principles and ideas for industrial, decorative, display and science fair uses. Also explains how to use fiber optics in the medical and professional field.

Fiber Optics Idea Book	**E9095**	**$19.50**



DESIGNERS GUIDE TO FIBER OPTICS

248 page paperback book serves as a practical reference source for developing criteria for evaluating, selecting and applying components and subsystems. Includes detailed drawings, glossary, charts of component characteristics and list of manufacturers. **E9668 $22.50**

PROFESSIONAL FIBER OPTICS DESIGNER'S KIT

For the serious researcher/designer to construct point-to-point, simplex and duplex systems. Kit contains:

- Splice (2)
- Retention Clip (4)
- Single Position Plug Assembly (16)
- Dual Position Plug Assembly (2)
- Single Position Device Mount TO-18 (4)
- Single Position Device Mount TO-92 (4)
- Single Position Bulkhead Receptacle (2)
- Dual Position Bulkhead Receptacle (2)
- Fiber Cable (5m)
- Cutting Fixture (1)
- Hot Knife (1)
- Strip Tool (1)
- Tray (1)
- Case (1)

Kit features AMP Optimate dry non-polish fiber optic connectors for low loss (less than 3dB) repeatable, quick snap-action connections. **E31,896 $395.50**

DELUXE ILLUMINATOR

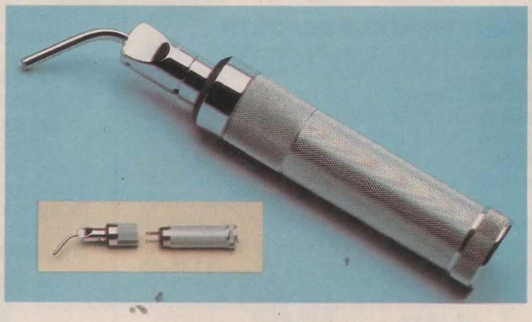
A 150W, 21V quartz iodine lamp combines high intensity light with low heat output. Produces 3250°K, 36 foot candles @ ¼″ dia. 200-1800 max. hrs. life. 4″ × 5″ × 9″.

Deluxe Illuminator	**E72,162**	**$594.50**

Quick-Disconnect Adapters. Couples light guides to the deluxe illuminator.

Adapter for ¼ inch diamater	**E42,343**	**$59.50**
Adapter for 1/16 inch & ⅛ inch diameter	**E42,342**	**$59.50**

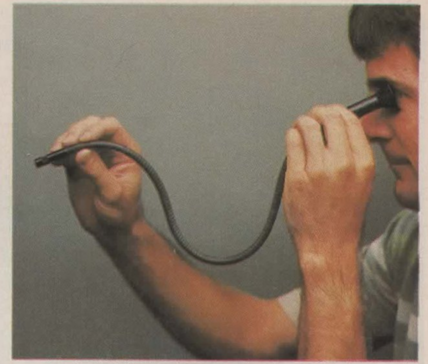
See our selection of high transmission fiber optics light guides on Page 73.



COLD LIGHT INSPECTION LIGHT

Probe into the darkest of corners and cracks with this Halogen light. Illumination is transmitted through fiber optics for brilliant yet cool illumination. Makes inspections of fine or hidden parts a snap. Two-piece system. Includes Finnoffocular transilluminator which may be sterilized by steam, gas or germicide (remove the lamp first) and 3.5V rechargeable battery handle. Handle has Rheostat control for variation of light intensity, positive on/off switch to avoid accidental battery drainage and can be easily charged from any power outlet.

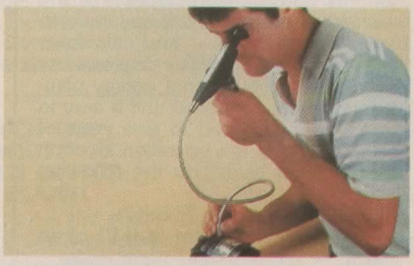
Cold Light	**E34,918**	**$324.50**
Halogen Bulb	**E34,921**	**$ 29.95**
Halogen Otoscope Head	**E34,917**	**$179.50**



EDMUND FLEXIBLE FIBERSCOPE

Monitor hazardous processes or demonstrate fiber optics with this incredible device! It features coherent fiber optics with a 7X magnifying eyepiece. Semi-rigid gooseneck sheathing is ⅜ diameter and 17″ long. Fiberscope provides a 70° field of view. Also serves as a simple inspection instrument in lighted areas.

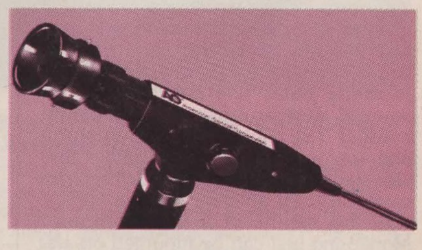
Fiberscope	**E61,160**	**$469.50**



DELUXE ILLUMINATED FIBERSCOPE WITH A 10X EYEPIECE

This portable, coherent inspection device has a self-contained cool light source. Equipped with fixed focus, 60° wide angle lens. The 24 inch flexible gooseneck can be preformed and snaked into complex bends through ports slightly larger than 0.312 inch. Includes right angle attachments, case and batteries.

Deluxe Fiberscope	**C1666**	**$1285.00**



A O FIBER BORESCOPE

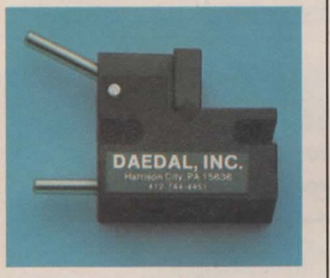
It will flex up to ±10° to absorb deflecting forces common to routine on-line inspection. Available in two diameters, each with a flexible fiber optic image bundle in a stainless steel shaft. Illuminated by a battery-powered halogen lamp. The 1.1mm diameter model has a field of view of 65° and a depth of field of 3.0mm to 7.5mm. The 5.5mm diameter model has 60° field of view and a depth of field of 10mm to infinity.

A O Fiber Borescope 2.1mm diameter	**C33,964**	**$1445.00**
A O Fiber Borescope 5.5 mm diameter	**C33,965**	**$1475.00**

FIBER-LITE ILLUMINATOR

Provides in excess of 10,000 candles of illumination with the lens at a working distance of 3." Suitable for up to 20X magnification. 30W Quartz-Halogen lamp. 26" chromed gooseneck fiber optic tube. With the included lens (mounted in a 2.375"x0.88"x.508" cell), system can be used independently for incident illumination or in conjunction with the stereomicroscope lamp ports for both incident and transmitted illumination. 110/120VAC. 7½" high; 5¼" wide.

E35,277 $483.50



FIBER OPTIC CLAMP

Specially designed clamp provides rapid, simple clamping of optical fibers. Squeeze the miniature handles to open, place fibers in alignment groove, release the handles and the fiber bundle is securely clamped. The fiber clamp can be mounted to Edmund Scientific mini and small series of linear translation stages as well as the miniature rotary translation stage.

Fiber Optic Clamp
E33,512 $184.50

EXPERIMENT WITH RAW GLASS FIBERS!

Construct effective prototype fiber optic devices. Over 12,500 individual glass fibers, each .002 inches in diameter. The numerical aperture of light acceptance is .5 (68). 1.5 meters length.

Fiber Optic Bundle
E31,735 $79.50

PLASTIC FIBER OPTICS STRANDS TRANSMIT LIGHT

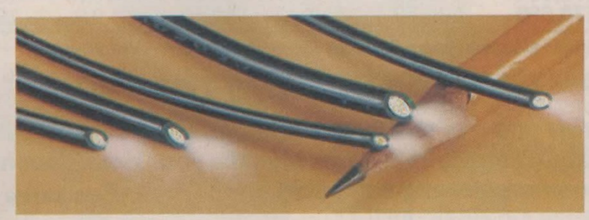
Individual unjacketed strands will make intriguing light-carrying devices, toys, displays, etc. Available in five popular diameters. Spool prices available.

Stock No.	Price $	Fiber Dia.	Minimum Quantities
E2530	**$.19/Ft.**	.010"	25 to 2,000 ft.
E2529	**$.79/Ft.**	.020"	20 to 1,000 ft.
E2528	**$.99/Ft.**	.030"	15 to 500 ft.
E2527	**$1.29/Ft.**	.040"	10 to 250 ft.
E2526	**$2.19/Ft.**	.056"	5 to 200 ft.

SAMPLE KIT

20 ft. of 10 mil unjacketed fiber; 15 ft. of 20 mil unjacketed fiber; four 1-ft. jacketed light guides; 16,32,48, and 64 fiber.

E41.213 $44.50



PLASTIC FIBER LIGHT GUIDES ONLY

All fiber light guides are jacketed in black plastic. Minimum order is 5 ft. Discount on quantities of 200 ft. or more for each stock number, uncut!

Number	Price per ft.	O.D. of Light Guide	No. of Fibers	Min. Radius of Bend	Fiber Dia.
F2504	**$2.75**	0.087"	16	¼"	0.010"
F2522	**$2.65**	0.087"	1	¾"	0.040"
F2505	**$2.85**	0.110"	32	⅜"	0.010"
F2506	**$3.15**	0.119"	48	½"	0.010"
F2507	**$3.25**	0.130"	64	¾"	0.010"

Quantity Discount Available

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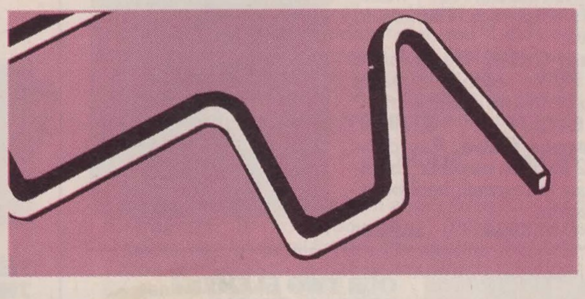
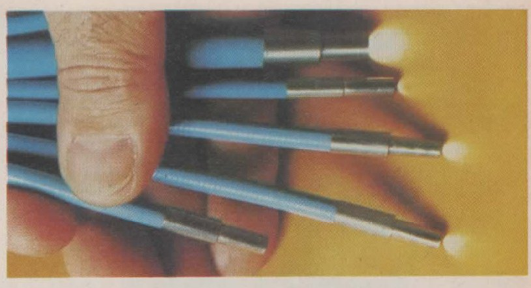


IMAGE CONDUIT

3050 (50 micron dia.) fused together to form a ⅛ inch diameter rod that transmits a coherent image. Use a Bunsen burner to bend into complex shapes. Due to small diameter to individual fibers it can be bent to angles with very small radii with minimum loss in transmission. Resolution of 80 lines per mm.

6 in. Length	C40,642	$32.95
12 in. Length	C40,643	$46.50

YOUR COMPLETE INDEX IS ON PAGE 111



FLEXIBLE FIBER OPTICS LIGHT GUIDES

High-transmission glass sheathed in plastic tubing, ground and polished ends with metal tips. Aperture: 0.55 takes 60° cone of light. 70% light enters, 8% ft. lost. Transmits wavelengths of 400-2,000µ.

Number	Price	Length	F.O. Dia.	Min. Rad. of Bend	No. of Fibers
C40,640	$84.50	24"	1⁄16"	⅝"	490
C42,344	88.50	36"	1⁄16"	⅝"	490
C42,345	94.50	24"	⅛"	¾"	1470
C40,644	98.50	36"	⅛"	¾"	1470
C40,639	112.50	12"	¼"	1½"	5880
C42,346	119.50	24"	¼"	1½"	5880
C42,347	129.50	36"	¼"	1½"	5880

Deluxe Illuminator **E72,162 $549.50**

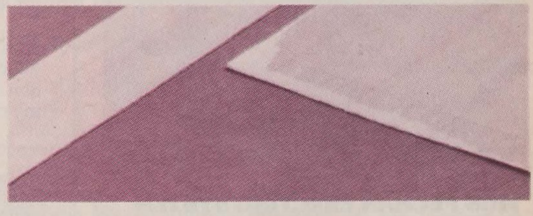
GLASS FIBER OPTICS LIGHT GUIDES

Ideal for inexpensive one-source lighting for meters, dials, etc. 200 (2.5 mil dia.) noncoherently bundled optic fibers in PVC jacket (0.087 O.D.). Minimum radius of bend. Glass −58° to +1,000°F; PVC jacket −58° to +220°F. Light transmittance (400 to 200µ): @ 1 ft. 65%; @ 4 ft. 55%; @ 6 ft. 45%; @ 12 ft. 20%.

Minimum order, 10 ft.	E2516	$2.35/Ft.
Quantity prices available on 1,000 ft. or more!		
Capp. Solution, 1 dr. bottle	E61,090	$11.50
Epoxy Cement (Trans.)	E40,674	$9.25

Rigid Clad Rod - Simplest and most economical form of fibre optics for light transmission. Can isolate or remotely locate photosensers and light sources. Comes complete with ground polished ends. Bends with heat.

1/16" x 12" LG.	C49,237	$12.50
1/8" x 12" LG.	C49,238	$19.50
1/4" x 12" LG.	C49,239	$41.50

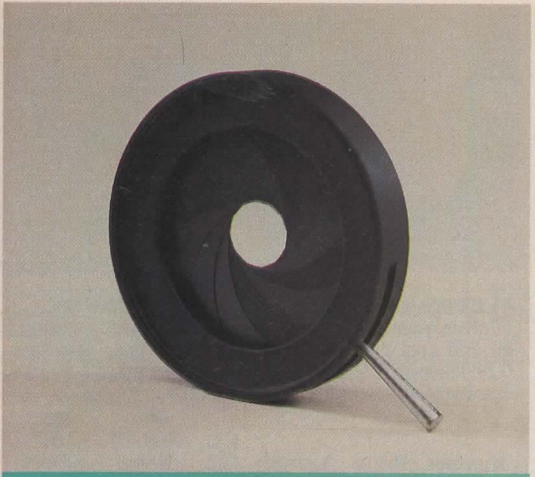


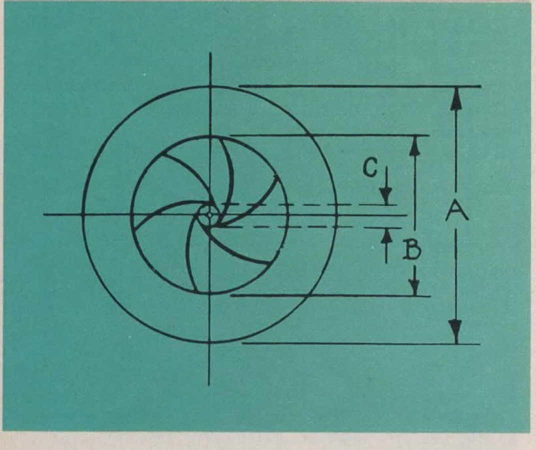
FIBER OPTIC RIBBON AND SHEETING

Flexible paper-thin coherent sheet of 2-3 mil glass fibers adhesive-bonded approximately 400/inch. Used in a variety of image transmission applications.

Ribbon (1"×12" long)	E41,225	$109.50
Sheeting (9"×12")	E60,795	$598.50

ORDER BY PHONE
416-787-4581
OR BY TELEX:





PRECISION IRIS DIAPHRAGMS

- **From Germany and England**
- **Exceptionally Smooth Operations**
- **For Large Volume Applications**

We have a continuing supply of fine quality iris diaphragms designed for instrument use. Lever-operated iris leaves made of blued spring steel in lightweight brass or aluminum mounts. All offer exceptionally smooth operation.

Number	Price	Outside Dia.(a)	Aperture Max.(b)	Aperture Min.(c)	Thick (d)	Comments
E35,114	$56.50	13.0	6.0	1.0	5.5	Lever, Br
E35,113	56.50	14.0	7.0	1.0	6.0	Lever, Br
E42,124	51.75	15.5	8.5	1.0	5.0	Lever, 8mm, Al
E30,263	46.95	19.5	12.0	1.0	5.0	Lever, 14, Br
E42,123	56.50	22.0	14.0	1.0	5.5	Lever, 12, Al
E35,112	66.25	26.0	12.0	1.5	7.0	Lever, Br
E35,111	66.25	30.0	15.0	1.5	6.0	Lever, Br
E35,110	68.50	37.0	20.0	1.5	8.0	Lever, Br
E42,122	70.95	40.0	27.0	1.2	6.6	Lever, 11, Al
C40,997	48.50	42.5	25.0	1.0	8.5	Outside thrds. 27.8; Filter holder; Lever, 20.5 Br
C40,998	56.50	48.0	30.0	1.0	12.5	Outside thrds. 33.9; Filter holder; Lever, 20.5 Br
E41,972	94.75	49.0	33.0	2.5	10.0	Lever, 2mm, Al
E42,121	58.25	48.5	30.0	1.2	7.5	Lever, 10mm, Al
E35,109	72.50	52.0	33.0	2.0	5.5	Lever, Br
E41,973	72.50	55.0	41.0	1.2	6.5	Inside thrds. 50; Lever, 2
E30,118	72.50	58.0	42.0	2.0	6.5	Lever, 13.0, Br
E30,264	174.50	100.0	75.0	7.0	9.0	Lever, 13.5, Al
E60,644	282.00	150.0	110.0	7.0	13.0	Lever, 30.0, Al
E70,894	513.50	208.0	150.0	10.0	16.0	Lever, 31, Al
E70,895	565.50	300.5	225.0	9.9	19.0	Lever, Al

Note: Dimensions in mm. Br = Brass; Al = Aluminum

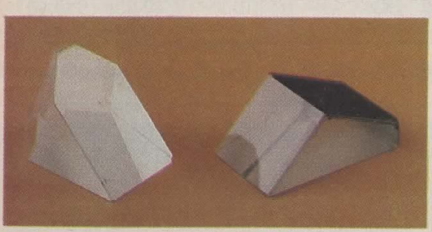
SCIENCE AND TECHNOLOGY AGORA

Now you can find in our catalogue and at our retail store, many unusual but useful hard-to-find items to make your work, your home, your life, more easy, comfortable, and enjoyable. Let us serve your needs, order today.

MOUNTED 5 REFLECTION PRISM ASSEMBLY HAS 2 ELEMENTS FOR QUALITY IMAGE INVERSION

Smaller version of 31,048 Pechan Prism. Mounted in black anodized aluminum housing. 19.5mm high x 24.9mm diameter. Clear aperture is 8mm.

Mounted Pechan Prism
E30,847 $99.50



THIS PECHAN ERECTING SYSTEM OFFERS STRAIGHT THROUGH IMAGE CORRECTION

Unmounted Pechan Prism erects image without reverting it or displacing or deviating beam. Two elements measure 18mm x 24mm x 35mm. Optical path through glass is 88mm.

Pechan Prism E31,048 $92.50

TRUE IMAGE ERECTOR PROVIDES CORRECT LEFT TO RIGHT ORIENTATION

Contains smaller version of 31,048 Pechan Prism and a negative lens to increase working distance. Black anodized aluminum. Housing measures 1¼″ dia., 1⁹⁄₁₆″ lonf. Supplied with tube measuring 1¼″ I.D., 1⁵⁄₁₆″ O.D., 3½″ long. Clear aperture is 8mm.

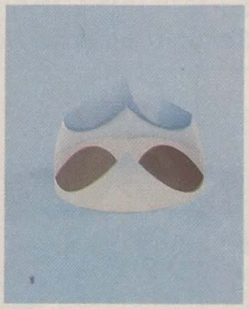
Mounted Image Erector
E2007 $139.50

Corner Cube Reflector Trihedral Prisms

For laser work, lab experiments, optical shops. Use corner cube as a moving retroflector. BK-7 material. Knife-edge roof. Flatness to 1/10 wave.

1″ Corner Cube. Ray deviation of 16 to 25 arc seconds. Suitable for lab experiments, laser work.
E41,378 $179.50

2½″ Corner Cube. Ray deviation of 2 to 5 arc seconds. Excellent for use in research and exacting operations.
C41,399A $329.50



OUR TWO ELEMENT PECHAN PRISM RECTIFIES IMAGES

Mounted Pechan Prism. Prism number 31,048 in black anodized, 3¼″ long x 2″ ciameter aluminum housing. Ends of housing are 1¼″ O.D. and 1¼″ I.D. to fit standard 1¼″ telescopes and eyepieces. Clear aperture is ½″.

Mounted Pechan Prism
E6004 $149.50

ERECTOR ASSEMBLY

Two coated porro prisms, precision alighed in black metal housing. Aperture: 10mm diameter, 25mm optical axes spacing. E30,848 $46.50

THE TYPE 2 PORRO 7MM MOUNTED PRISM ORIENTS IMAGES

The prism has a diameter of 38.1 mm and stands 15.4 mm high.

Type 2 Porro 7 mm Prism
E31,409 $59.50

YOUR COMPLETE INDEX IS ON PAGE 111

Metrologic

A LASER THE SIZE OF A FLASHLIGHT...PRICED UNDER $900

Metrologic's ML811 LaserPoint is the world's smallest general purpose laboratory laser. Measuring 6" x 1.3" x 1.9" and weighing less than 12 ounces, it's as easy to use as a hand-held flashlight. LaserPoint is a useful helium neon laser with research and educational applications. It also is a well conceived laser pointer for all audiovisual presentations, including large lecture halls, and planetariums. Hard-sealed tube withstands repeated jolts and falls. Laser is housed in high impact aluminum case with contoured edges. Emits a highly visible, safe bright red beam. Fits comfortably in the hand. High efficient switching power supply ensures laser does not get hot during extended use. Classified as a CDRH Class II laser product. Comes with a 110V AC plug module adapter.

LaserPoint C35,712 $864.50

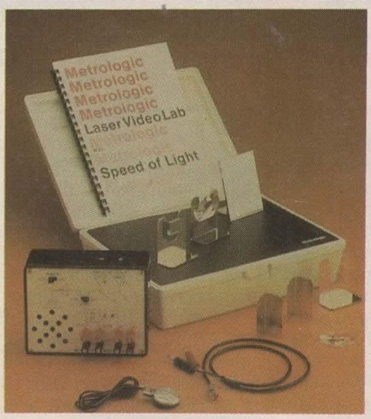
Battery Pack. For LaserPoint use where AC power supply is not available or desired **E35,786 $324.50**

YOUR COMPLETE INDEX IS ON PAGE 111

LASER VIDEO/SPEED OF LIGHT LAB

Laser Video Lab not only gives you that answer, within 1 percent, but can receive the light from a distant audio-modulated laser, detect and amplify it, and will reproduce voice communcation and music or funish an output for a video monitor to reproduce pictures. Experimenters kit includes an electronic control box which has a 1MHz oscillator and dual channel photodetector amplifier, beamsplitter, high impedance microphone, detailed instruction manual and more. Comes packed in a rugged carrying case. Required for operation but not included are a modulated laser, video camera and dual channel oscilloscope. Lab weights three pounds.

Video Lab C35,773 $328,50



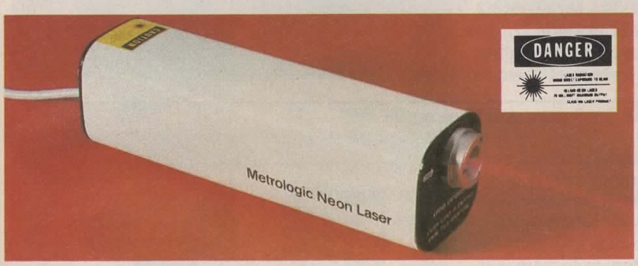
"BUILD A LASER 0.5 MW KIT"

Your request for an affordable helium-neon laser that will give trouble-free operation for many years has prompted us to offer the O.5 MW "BUILD A LASER KIT".

The assembled laser is ideal for the student laboratory, classroom demonstrations, laser shows, and holography instruction. The kit features the long lasting hard-seal laser tube, printed circuit board, rugged aluminum housing, and all of the component and mounting hardware that you will need. Schematic diagrams, illustrations and complete step-by-step assembly instructions make it possible to assemble the laser and have it working in two or three hours.

In fact this is the same assembled Laser C61,308, Specs shown below. **Laser Kit C49,561 $495.50**

Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4

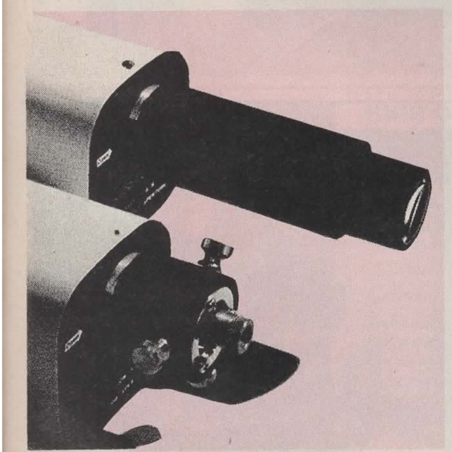


METROLOGIC HELIUM-NEON LASERS

Metrologic, one of the pioneers in offering affordable lasers for high school and colleges, presents its line of hard-seal practical tools for education and industry.

- **Rugged aluminum housing**
- **Built-in threaded optics mount**
- **Designed to operate in temperatures −20° to 50°C**
- **Components are designed, engineered and manufactured in one central plant for flexibility and quality control**

Item	Minimum Output	Beam Diameter	Beam Divergence	Polarization	Size (mm)	Weight	Shape	Type	Class	Price
C61,308	0.5mW	0.53	1.5Mrad	Random	239 × 72 × 74	4 lbs.	Rectangular	Self-contained	II	649.50
C33,420	0.8mW	0.53	1.5Mrad	Random	239 × 72 × 74	4 lbs.	Rectangular	Self-contained	II	739.50
C61,309	0.8mW	0.53	1.5Mrad	Random	175 × 135 × 60	5 lbs.	Cylindrical	Remote PS	II	1089.50
C61,310	0.8mW	0.53	1.5Mrad	Modulated 15%	328 × 72 × 74	6 lbs.	Rectangular	Self-contained	II	936.50
C61,311	1.5mW	0.53	1.5Mrad	Modulated 15%	328 × 72 × 74	6 lbs.	Rectangular	Self-contained	IIIb	995.50
C61,312	2.0mW	0.68	1.2Mrad	Random	328 × 72 × 74	6 lbs.	Rectangular	Self-contained	IIIb	958.50
C61,313	3.5mW	0.68	1.2Mrad	Random	328 × 72 × 74	6 lbs.	Rectangular	Self-contained	IIIb	1155.50
C61,314	5.0mW	0.68	1.2Mrad	Random	540 × 72 × 74	6 lbs.	Rectangular	Self-contained	IIIb	1495.50



SPATIAL FILTER WITH 6X TELESCOPE

For proper and successful experimentation on many laser applications it is required often to clean the laser beam by removing optical noise and stray light rays. Spatial filter features X and Y axis positioning by mounted thumbscrews and Z axis are made by rotating the focusing ring. The optics, A + 15mm focal lens and a 50 micron diameter pinhole are excellent for all lasers in this catalogue and for other helium-neon lasers with beam diameters from O.5 to 0.7mm

Spatial Filter C49,638 $289.50

The laser beam emerges with about 50 to 30 m Rad divergence. If however other divergence is required for an application, the spatial filter/telescope combination is necessary which functions 6X beams shaping telescope.

Spatial Filter/6X telescope C49,639 $485.50

PHYSICS LAB MANUAL AND COMPUTER PROGRAMS

Science Fair or Laboratory Experiments with a laser can be substantially advanced with the instructions and information from the Physics Laboratory Experiments Manual. It describes in detail, step by step, 49 experiments in mechanics, waves, electricity, magnetism, atomics, and more.

Student Physics Laboratory Manual C49,634 $34.50

Advanced Physics Laboratory Manual C49,635 $39.50

To suplement the Physics Laboratory Manuals, there are computer programs how to gather lab data; check computations and help to understand laser light physics is a very valuable asset for the microcomputer owner. (Please specify your computer make and model, cassette or tape)

Sample Microcomputer Program C49,636 $32.50

Advanced Computer Program C49,637 $224.50

Diverging Lens in Cell
Double concave lens spreads laser beam for holographic viewing, beam collimation, or image enlargement. **C49,640 $58.50**

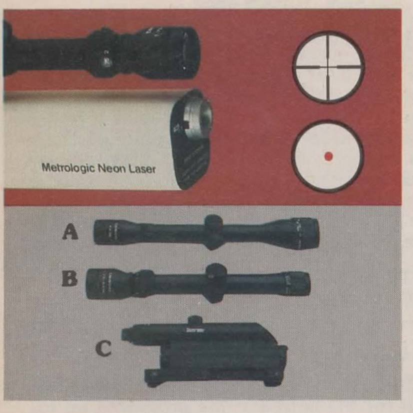
1. 6mm dia x 4mm High Reflectance Mirror
Over 99.5% reflectance for 633 nm wavelength from perpendicular to 45 degree incidence. Flat within half a wavelength. **C49,641 $58.50**

2. 25 x 38 x 6 mm High Reflectance Mirror
Useful for holding laser beam in a small classroom, constructing Michelson interferometers and attaching to rotating objects for testing or creating lissajous patterns. **E30,837 $34.95**

3. 25 x 38 x 3 mm Front Surface Mirror
Front surface aluminized and overcoated mirror. Useful in applications where reflecance and mirror flatness are not critical. **E31,828A $19.50**

4. 70 x 97 x 3 mm Front Surface Mirror.
42,212A $26.50

5. 12 x 12 mm Thin Mirrors (pair)
Paper thin square mirrors that have negligible mass. May be glued to a pulsating or vibrating surface such as a loudspeaker cone and reflect a laser beam without seriously affecting the vibrating source. **31,005A $24.50**



LASERPOINT® ACCURACY!

Edmund Scientific Company introduces the first off-the-shelf series of sighting and aiming devices for laser use. These affordable instruments are unsurpassed for convenience, reliability, versatility, ease of mounting and simplicity of operation. Quality optics and workmanship in these units eliminates the need for makeshift or expensive, customized devices. Constructed of aircraft aluminum with an anodized finish. Laserpoint® assures years of operation in a variety of environments.

Laserpoint® units feature: a precise aiming point on the same plane as the object to be viewed; a quick switch mounting system for easy transfer from one instrument to another; adjustments (after mounting) provide exact correlation—horizontally and vertically—of Laserpoint® with laser beam at target: focusing objective systems provide precise parallax correction to insure that the aiming point remains on the target plane at all distances (except for F34,664 and F34,665, which are parallax-free).

(A) MONO-POWER LASERPOINTS: FULLY COATED OPTICS, BLACK FINISH, 30/30 CROSSHAIR RETICLE DESIGN, INCLUDES RING MOUNTS AND BASE PLATE.

Stock No.	**C34,662**	**C34,663**
Objective Dia.	20mm	32mm
Power	4X	4X
Eye Relief	2½"	3"
Tube Dia.	¾"	1"
Length	10¾"	12"
Weight	5 oz.	11.8 oz.
Range	20′ to ∞	27′ to ∞
Reticle		
Adjust	.5 mil incr.	.25 mil incr.
Price	**$69.50**	**$164.50**

(B) VARI POWER LASERPOINTS: FULLY COATED OPTICS, BLACK FINISH, 30/30 CROSSHAIR RETICLE DESIGN, **WATER PROOF, SHOCK PROOF, FOG PROOF,** INCLUDES RING MOUNTS AND BASE PLATE.

Stock No.	**C34,660**	**C34,661**
Objective Dia.	20mm	40mm
Power	1.75X to 5X	1.75X to 5X
Eye Relief	3¼"	3"
Tube Dia.	1"	1"
Length	10⅝"	12⅝"
Weight	10¾ oz.	15 oz.
Range	72′/24′ to ∞	48′/18′ to ∞
Reticle		
Adjust	.25 mil incr.	.25 mil incr.
Price	**$189.95**	**$199.95**

(C) NON-MAGNIFYING ILLUMINATED LASERPOINTS: FULLY COATED OPTICS, BLACK FINISH, RED DOT RETICLE DESIGN, BUILT-IN MOUNTING PLATE.

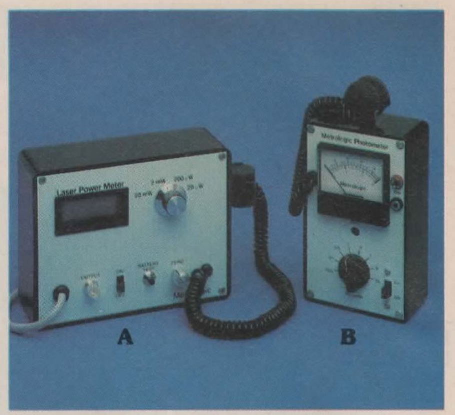
Stock No.	**E34,664**	**E34,665**
Objective Dia.	26mm	20mm
Power	1X	1X
Length	5⅞"	7⅜"
Weight	8.5 oz.	11.1 oz.
Illumination	Available Light Only	Battery Light w/Rheostat & Polarizer
Price	**$232.50**	**$435.50**

YOUR COMPLETE INDEX
IS ON PAGE 111

LASER POWER METERS

(A) Digital Power Meter. Designed for accurate BRH-type compliance measurements. Instrument's four ranges have full-scale readings of 20mW, 2mW, 200uW and 20uW. Calibration is within 2%. Portable 2.4" x 5.4" x 7". Powered by nine volt battery (not included). LCD display. Battery test feature.
E34,515 $849.50

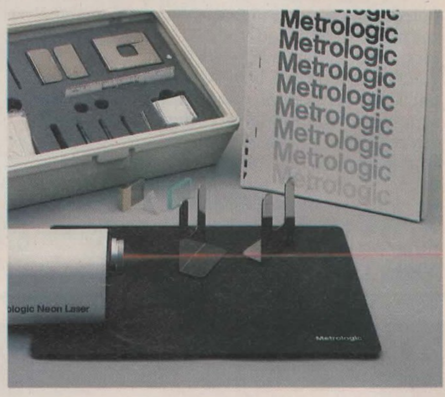
(B) Photometer. Measures beam intensity. Full range readings range from 0.003 to 10mW. Meter is calibrated for direct reading of 633 nm wavelength of helium-neon light. DC to 20kHz frequency response. Accuracy is within 10% for each of eight sensitivity ranges. Takes two nine volt batteries (not included).
C34,516 $297.50



LASER OPTICS LAB

Optics Lab lets you investigate the principles of optics, including refraction, reflection and critical angle. Lab includes three lenses, four mirrors, coated beam splitter, beam spreader, triangular prism, air wedge, fiber optics light guide, a pair of glass interference plates and polarizing and color filter sets. Also includes an optics platform, razor blades, magnetic tape and a metric ruler. Optics platform uses six metal component carriers which attach magnetically to a steel optical table. Components come in a reusable carrying case. Set includes the 64-page instructional manual, "Laser Optic Experiments Using A Helium-Neon Laser." Book provides detailed instructions on laser safety and operation, an explanation of laser theory and a thorough list of experimental exercises. Provides the basic optical and mechanical components for optics studies for elementary and high school students. Weighs about six pounds.

Laser Optics Lab **C34,511** **$284.50**



SANDBOX HOLOGRAPHY LAB

Lab kit allows you to make "white light" holograms which can be viewed without a laser, create 360 degree holograms, expose film and more. Sandbox set includes two diverging lenses on carriers, two front surface mirrors with carriers, beam splitter with carrier, film holder (two glass plates and two clamps), 72 sheets of film, developer, bleach, 360 degree hologram set (mirror, jar, pedestal and subject), two beam test and shutter cards, safelight filter, hologram, diffuser for soft light holograms and the book "Holography Using a Helium-Neon Laser." The set is packed in a reusable carrying case. The book, written by Dr. T.H. Jeong, offers progressive exercises which build from preliminary tests through basic holograms. Additional exercises include holographic applications and advanced forms such a multiple subject illumination and soft lighting. Shipping weight is about six pounds.

Sandbox Holography Lab **C34,512** **$294.50**

Metrologic
SANDBOX HOLOGRAPHY LAB
Metrologic Neon Laser

PHYSICAL OPTICS LAB

Use this Physical Optics Lab to create a two-hour introductory lesson filled with rapid-fire demonstrations. See the results of optical transformation. Witness Fresnel and Fraunhofer diffraction. Dissect a diffraction pattern using masks. Create a continuous tone photograph from a halftone. Retrieve two photographs from a single transparency. Filter unwanted data from a photograph. Change spatial frequency. Students need no math preparation to understand the phenomena occurring before their eyes. Lab serves as an ideal introduction to the mathematics of transformations and Fourier analysis. Lab kit includes three mounted lenses, two mounted front surface mirrors, eight steel "L" mounts, eight steel "U" mounts, a ±15mm focal length lens, a mylar viewing screen, 24 transparencies and magnetic strips. All items are fitted in a reusable carrying case. Comes with a complete instruction book. "Physical Optics Experiments Using A Helium-Neon Laser." Book provides information on diffraction, photography and Fourier math. Weighs about six pounds.

Physical Optics Lab **C34,513** **$294.50**

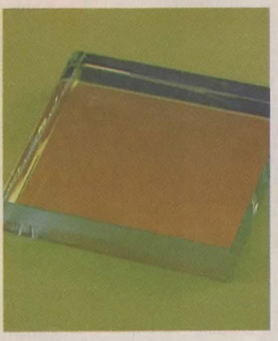
PHYSICAL OPTICS LAB
Metrologic
Physical Optics
Metrologic Neon Laser

Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4

ENGINEER'S BENCH LEVEL

Precision level has cross and vertical vials. Tinted vial liquid for optimum reading. V groove in base for wide application on cylindrical workpieces. 1 minute of arc in bubble movement of 1 division indicates an off-level. Accurate to 0.0035″ per foot. 6.5″ (165mm) long.

Engineer's Bench Level
E31,534 $164.50



HELIUM-NEON LASER MIRRORS HELP ATTAIN MAXIMUM REFLECTION

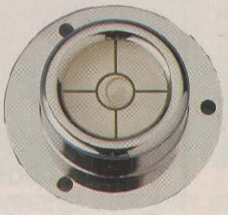
Precision mirrors are each centered at 633nm at 45 degrees. Three sizes.

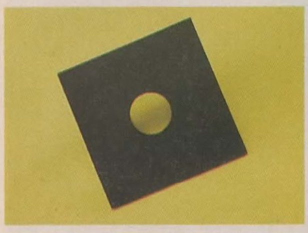
32mm × 32mm
E31,495 $31.25
47mm × 51mm
E31,496 $35.95
64mm × 97mm
E31,497 $52.75

CALIBRATED CIRCULAR LEVELS

A) ⅞″ dia. circle and crosslines. 1¾″ base with three pre-tapped holes. 10 minutes per 0.1″ sensitivity. ⅝″ high.
D42,763 $48.50

B) ½″ dia circle. No crossline. 1″ base with three pre-tapped holes. 45 minute sensitivity. ½″ high.
D40,068 $14.95



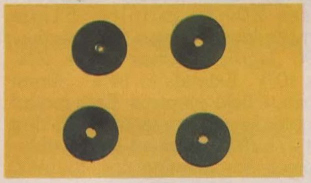


PRECISION PINHOLE MOUNTS

2″ x 2″ Mount. 0.75″ thick. Tooled center hole to accept 0.625″ diameter pinhole metal discs.
E30,607 $40.95

APERTURE CONTROLLING PINHOLES

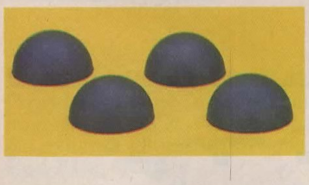
Blackened metal foil mounted in 0.625″ diameter metal disc. Used to control light beam, laser beam, etc. apertures. **10 Micron Diameter (±2.0μ)**
E30.605 $211.50
25 Micron Diameter (±1.0μ)
E30,606 188.00



PINHOLE SETS FROM ENGLAND

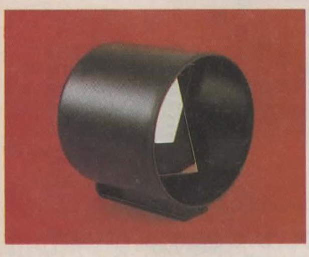
A) One each in following micron ranges: 2-5; 6-10; 12-18; and 19-24. Accuracy: ±0.5μ.
E41,480 $278.50

B) One each in following micron ranges: 25-40; 41-75; 76-120; and 121-200. Accuracy: ±2μ.
E41,481 $255.50



SORBOTHANE VIBRATION MOUNTS

Patented Sorbothane polymer combines dimensional stability of a solid with physical properties of a liquid. Absorbs and dissipates energy, reduces vibration and deals with multi-directional forces. Keeps equipment weighing under 70 pounds stable. Package of four hemisphere foot mounts. Blue. E35,264 $22.95



HIGH QUALITY RETRO-REFLECTORS

Three optically-flat first surface mirrors are assembled into a hollow corner cube. Rigid, precise alignment provides for rapid response in ambient temperature changes. Shock resistant housing, ¼-20 tapped mounting hole. Aluminum mirror coatings with SiO protective overcoat. Gold coating is available, upon request, for optimized IR performance.

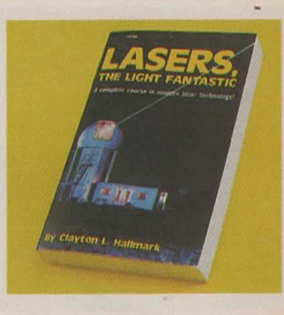
Aperture	1″/25mm	1½″/38mm
5min acc.	E42,388/$137.50	NA
1min acc.	E35,892/$170.50	NA
30sec acc.	E35,893/$225.50	E35,897/$248.50
5sec acc.	E35,894/$305.50	E42,390/$352.50
2sec acc.	E35,895/$462.00	E35,898/$499.50
1sec acc.	E35,896/$845.00	E35,899/$894.50

	2½″/63mm	5″/125mm
5min acc.	E35,900/$150.00	E72,273/$395.50
1min acc.	E35,901/$225.50	E35,906/$596.50
30sec acc.	E35,902/$276.00	E35,907/$995.50
5sec acc.	E35,903/$414.00	E35,908/$2,145.00
2sec acc.	E35,904/$546.50	NA
1sec acc.	E35,905/$998.50	NA

LASER TECHNOLOGY COURSE IN A PAPERBACK BOOK

"Lasers, The Light Fantastic," is a 14-chapter course in modern laser technology. Packed with a great deal of theoretical background, charts and diagrams. Fourteen chapters in this 294 page paperback book describe the various forms of lasers and how they work.

Laser Book
C9590 $14.50



LASER-GARD GOGGLES

Soft vinyl body conforms snugly with the face. Combines direct and peripheral vision with safety. Four vents permit air to enter without allowing light. Fit comfortably over prescription glasses. Lightweight. Designed for use with Helium-Neon lasers. O.D. 6 at 632.8nm. Luminous transmittance: 20%. Adjustable headband. One-year manufacturer's warranty.
C60854 $199.50

YOUR COMPLETE INDEX IS ON PAGE 111

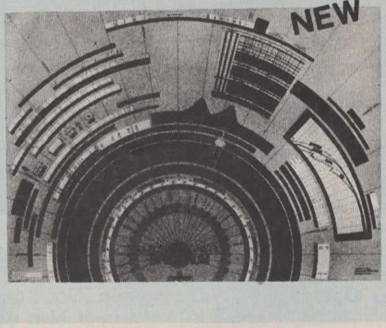
HIGH QUALITY LASER FILTERS OPTIMIZE YOUR LASER USE

Center wavelength tolerance: ±2nm. Blocking range: far UV-IR. Brandwidth tolerance: ±1.5

Wave-length	$52.75 ea.	$52.75 ea.	$130.50 ea.	nm	%	Use Filter
nm	½ × 1	¾ × ¾	25mm	N.B.W.	Trans.	W/Laser
457.9	E30,900	E30,903	E30,906	6.8	45	Cadmium
488.0	E30,692	E30,708	E30,907	7.2	45	Argon
514.5	E30,694	E30,710	E30,908	8.0	50	Argon
532.0	E30,901	E30,904	E30,909	8.6	50	YAG
632.8	E30,701	E30,717	E30,910	11.1	45	He-Ne
694.3	E30,739	E30,745	E30,911	12.4	45	Ruby
1064.0	E30,902	E30,905	E30,912	15.2	45	YAG

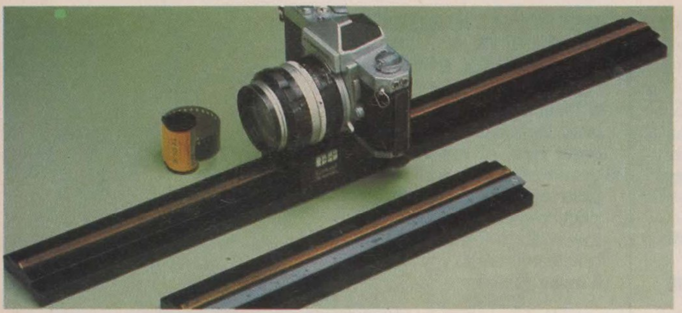
ORDER FROM US DIRECT

Efstonsciene has only one location, and services all orders directly from our Toronto, Ontario premises.



Electromagnetic Spectrum Chart

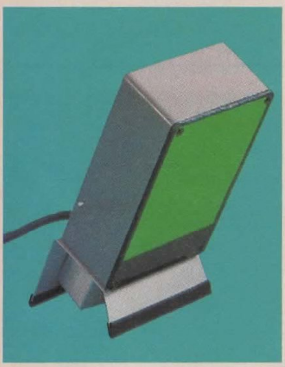
Electromagnetic Spectrum Chart. The dimensions are 33″x24″ and it is beautifully printed in full color on thick, coated paper. It charts the electromagnetic spectrum from gamma rays, through x-rays, ultra violet, visible light, infrared, microwaves, radio waves and power waves. Each of these major categories are further broken down into the numerous areas of useage.
Each chart comes with a separate printed sheet that gives a basic explanation. A must for the science and technology minded.
C49,607 $21.50



RACK AND PINION SLIDE FOR PRECISE LINEAR POSITIONING

Used for precise linear positioning of cameras, microscopes, levels; platform is a dovetail fit w/extruded aluminum track; position finely controlled by means of helical rack & pinion. Optional scale is 12 inches long with 1/100 inch and 1/10 inch graduations. Platform is 2¼" x 4", has a ¼" mounting hole, lock knob, and an adjustable gib.

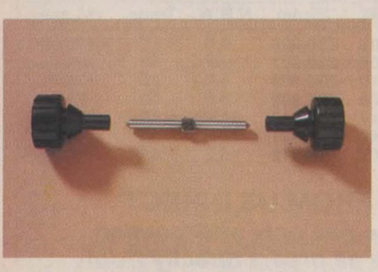
Platform without Indicator	E61,284	$99.50
Platform with Indicator with scale	E31,240	$109.50
12" Track without scale	E61,285	$79.50
12" Track with Full Graduated Scale	E31,241	$101.50
24" Extrusion Track without scale	E61,286	$119.50



MONOCHROMATIC LAMP

Portable light source. Very effect for viewing Brewster's Fringes, Newton's rings and for testing optical flats. Green filter gas discharge lamp displays sharply defined interference fringes. 1200 starts/bulb; 120 angle of diffusion. 4 Watts, 5460A wavelength, uniform illumination over 3" x 6" window; 115VAC.

Lamp	E71,780	$199.50
Replacement Bulb	E41,920	$42.50



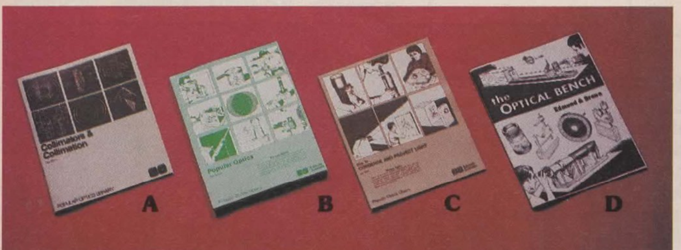
HELICAL GEAR SHAFT WITH KNOBS

Steel shaft with helical gear and removable knobs; 14 pitch; shaft dia. 0.177 inches; length 2¾", gear O.D. 0.275 inch.

E40,197 $39.50

Helical Rack. Brass, meshes with above gear. Length: 11¾".

E40,195 $38.50



EDMUND'S OPTICS BOOKS

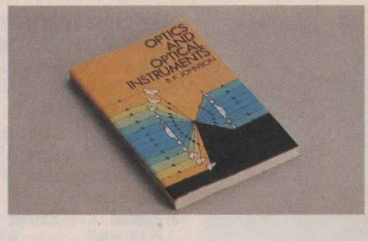
(A) "Collimators and Collimation. Optical technicians describe a wide variety of collimators. 36 pp. E9072 $11.50

(B) "Popular Optics." by Sam Brown. You'll learn how to build demonstration instruments, how to make your own magnifiers; testing methods; and more. 8½" × 11". 192 pp. E9445 $29.50

(C) "How to Condense and Project Light." A 32 page booklet crammed with illustrations & clear, concise explanations on condensing & projecting light. 8½" × 11". E9044 $11.50

(D) "The Optical Bench." Thirty-six pages of information include focal length and much more. E9085 $11.25

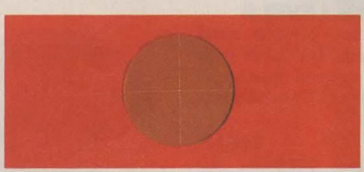
(E) "Fun With Optics." Thirty-three pages of information on optical fun, from how to make your own magnifiers, telescope, lightbox or overhead projector to a lens primer and invaluable information on fiber optics. With detailed instructions. Not shown. Paperback. **E9050 $11.25**



"OPTICS AND OPTICAL INSTRUMENTS"

Relates optical principles of the eye, scopes, etc. 224 pages. Paperback.

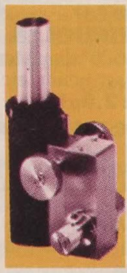
Optics Book E9300 $14.95



FINE 90° CROSSLINE RETICLE

Etched in glass and pigment-filled; 41mm x 2mm thick. For precise positioning.

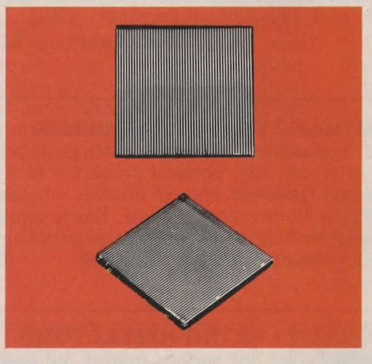
Reticle E30,645 $39.50



FINE/COARSE FOCUSING TUBE

70mm coarse and 3mm fine travel. Tube length: 160mm x 81mm x 78mm. Weighs 2 lbs., 6½ oz.

E71,525
$599.50



RONCHI RULINGS ETCHED ON GLASS

Evenly spaced parallel lines running to the edge of the plate. Each line & space width is equal. When 2 rulings are placed in contact at right angles, spaces between lines become perfect squares.

Lines/In	Number	Price	Lines/In	Number	Price
1 × 1" Size			2 × 2" Size		
50	E30,511	$18.25	50	E40,650	$38.50
100	E30,513	18.25	100	E40,654	38.50
150	E30,515	19.50	150	E40,658	56.50
200	E30,516	19.50	200	E40,660	56.50
250	E30,517	22.95	250	E40,662	68.50
300	E30,518	22.95	300	E40,664	68.50

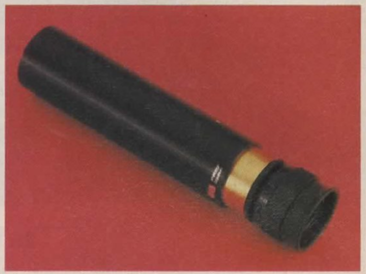
Lines/In	Number	Price	Lines/In	Number	Price
4 × 4" Size			6 × 6" Size		
50	E40,651	$106.50	50	E40,668	$225.50
100	E40,655	106.50	100	E40,670	225.50
150	E40,659	176.50	150	E40,672	369.50
200	E40,661	176.50	200	E40,673	369.50
250	E40,663	238.50			
300	E40,665	238.50			

AUXILIARY TELESCOPE

For alignment, measuring, observation. 32mm, achromatic doublet objective lens w/6.1X at infinity. Crossline glass reticle with center markings. 1½" O.D. x 10½" long. Kellner eyepiece with diopter scale. 12" to infinity focus. Aluminum body. Unmounted.

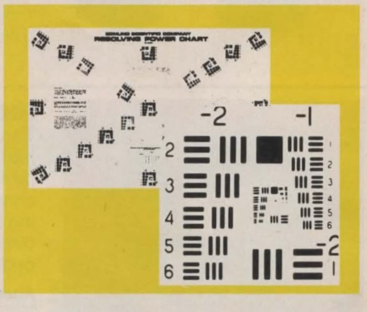
E60,941 $198.50

EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4



OPTICAL ALIGNMENT SCOPE

Focuses 20" to infinity. 51mm achromatic lens. 180mm f.l. objective. Fine 90 degree crosshair reticle. 2¾" O.D. x 10¼". Extends to 14⅝". 30mm f.l. apparent field eyepiece. Easy mount on V blocks or single-base, 2-ring mount J71,791. Excellent light gathering power. For aligning jigs, fixtures, towers, etc. E70,674 $384.50

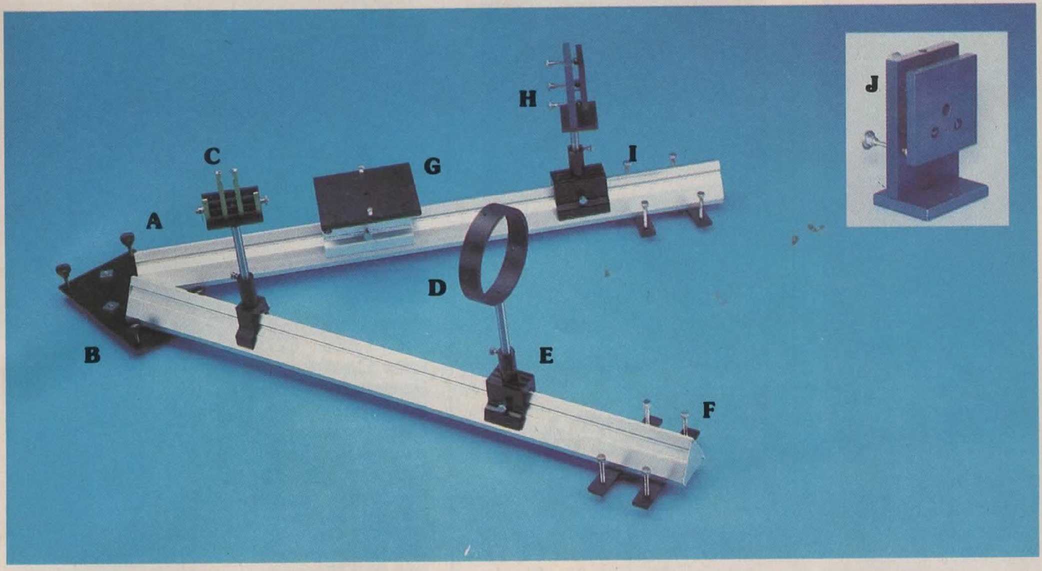


RESOLVING POWER CHART

Test your optical system with this USAF test pattern reproduction, the optical industry standard. Consists of stepped series of three bar patterns (elements) arranged together in ordinary sequence. Printed in black, red, yellow, and blue to test for chromatic aberration and at 90 degrees for testing astigmatism. 36" x 24".

E83,001 $29.95

YOUR COMPLETE INDEX IS ON PAGE 111



(A)EDMUND'S OPTICAL BENCH

An especially useful instrument for performing a variety of testing functions, mocking-up optical systems and mounting various accessories including lasers. The lightweight track is constructed of hollow, extruded and anodized aluminum with a standard 60° (Zeiss Type) profile.

One (1) Meter	C83,008	$109.50
Two (2) Meter	C83,018	$399.50

(B) CONNECTING BASE

Will make linear and angular arrangements for two or more optical benches. All the hardware you need is included. The aluminum base plate measures 6″ x 10″ x ¼″.

Universal Connecting Base	C71,551	$89.50

(C) COMPONENT HOLDER

For vertical or horizontal. Use with a ¼″-20 tapped hole on bench. Self-centering jaws (3mm × 4mm). Holds components up to 55mm dia.

Component Holder	C42,114	$109.50

(D) END RING HOLDER 4¼″ DIA. MIRROR

Provides support for mirror end (J72,470). Three mounting screws & a ½″ -20 tapped hole. For use with pin mount & pin carrier on optical bench.

End Ring Holder	C42,924	$86.50

(E) MOUNTING PIN

Fits into pin carrier and holds accessories. Pin has a ½″ 20 threaded female socket on one end with a socket set screw for mounting components. 120.5mm long.

Mounting Pin	C41,229	$29.50

(F) LEVELING SUPPORT BASE

Provides leveling adjustment for the optical bench. The hardware is included. Aluminum plate measures 1″ x 7″ x ¼″.

Support Base (2 pairs)	C42,926	$85.50

(G) ADJUSTABLE LASER CARRIER

For mounting lasers on the optical bench. It has three thumbscrews for fine adjustment to permit rotation of a laser about a vertical axis.

Laser Carrier	E71,552	$99.50

(H) UNIVERSAL RING MOUNT

Mount this device to the adjustable laser carrier for holding round lasers, alignment telescopes, etc. Rings have a 2⅞ inch. I.D. and are spaced 6¹⁄₁₆ inches apart. Each ring has three alignment thumbscrews 120° apart. Mounting base tapped for ¼ inch -20 screw.

Universal Ring Mount	E71,791	$84.50

(I) PIN CARRIERS

Fits optical bench. Locking thumbscrew holds mounting pin in position. 3 sizes.

60mm Carrier	E60,796	$79.50
90mm Carrier	E60,824	$79.50

(J) GIMBAL MOUNT DELIVERS FINE ADJUSTMENTS

The ⅜″ diameter opens to 1″ diameter in ⅜″ thick mounting plate. Anodized aluminum. 5″ x 2⅜″ x 3″. Ranges ±15° about 2 perpendicular axes in vertical plane.

Gimbal Mount	E60,816	$208.50

DICHROIC FILTERS

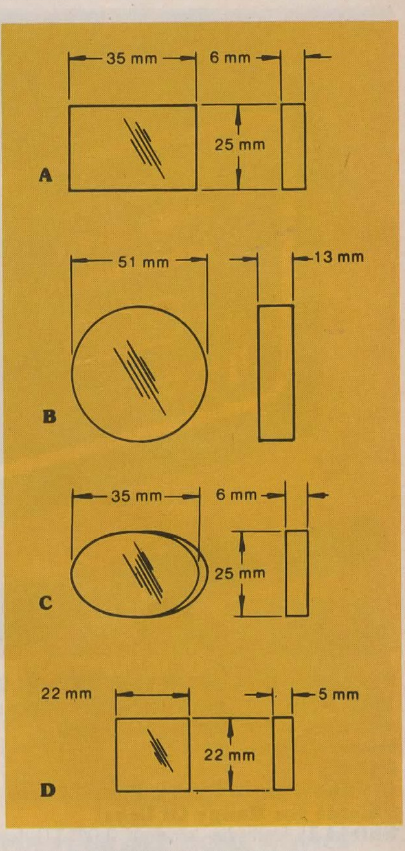
Interference type filters. Separates two colors (by reflection/transmission) from a white light source. 2″ × 2″ × ¹⁄₁₆″ thick. Non-metallic coating on glass substrate. Semi-transparent.

Red Filter	E30,634	$36.50
Blue Filter	E30,635	$36.50
Yellow Filter	E30,637	$36.50

SCIENCE AND TECHNOLOGY AGORA

Now you can find in our catalogue and at our retail store, many unusual but useful hard-to-find items to make your work, your home, your life, more easy, comfortable, and enjoyable.

Let us serve your needs, order today.



POSITIONING EQUIPMENT OPTICAL MIRRORS

These are ¼ wave first surface mirrors offered in metallic and dielectric combinations. Consult the information below with precision parabolic mirrors to determine coating characteristics.

Protected Aluminum		
25 × 35 × 6mm	E30,286	$33.75
51mm Dia. × 13	E33,511	$68.50
35 × 25 × 6 Ellip.	E30,837	$29.50
22 × 22 × 6mm	E33,510	$28.50
Enhanced Aluminum		
25 × 35 × 6mm	E32,513	$49.50
51mm Dia. × 13	E32,514	$84.50
35 × 25 × 6 Ellip.	E32,515	$49.50
22 × 22 × 6mm	E32,516	$43.50
Protected Gold		
25 × 35 × 6mm	E32,434	$72.50
51mm Dia. × 13	E32,435	$116.50
35 × 25 × 6 Ellip.	E32,086	$74.50
22 × 22 × 6mm	E32,433	$59.50

THIS pH LAB FITS IN YOUR POCKET

pH Pen uses con
ventional gel-fillec
combination elec
trode. LCD display
Solid-state. Get in
stant determina
tions in the field
2-12 pH range
0.1 pH resolution
5-40° C tempera
ture range. Singl
buffer calibration
1″ × ⅝″ × 5½″. In
cludes four buttor
batteries and case.

E35,558
$194.50

SPECTROLINE®
POWER SUPPLY
FOR QUARTZ PENCIL LAMPS
MODEL SCT-1
SPECTRONICS CORPORATION
WESTBURY, NEW YORK 11590

POWER SUPPLY FOR USE WITH U.V. LAMPS A, B, AND C

115V 50, 60Hz, 36W. 0.22 amps. Measures 5½" x 2¼" x 3". 3 ft. secondary & 8 ft. primary cord. 4 lbs.

Power Supply E40,765 $298.50

LAMPS

(A) Short Wave Quartz Pencil Lamp Offers Variety Of Shields For Range Of Uses!

Shield 1: 1mm dia. window, 0.04" I.D. for light source. With lamp. E40,758 $219.50

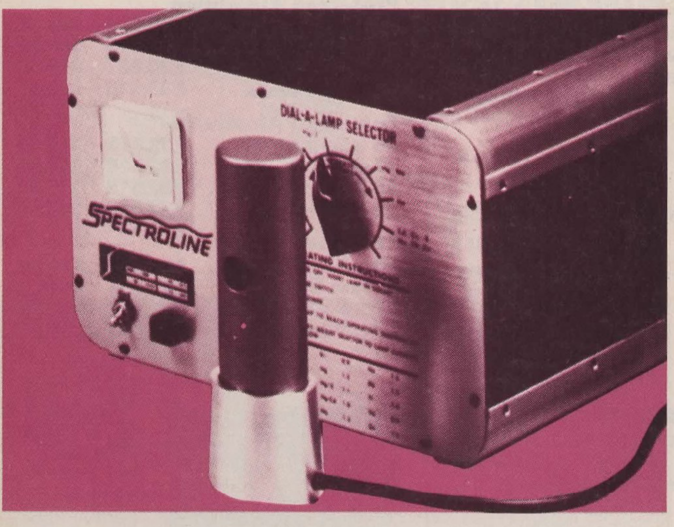
Shield 2: 5⁄16" x 5⁄8" window. With lamp. E40,759 $219.50

Shield 3: 3⁄16" x 1½" window. With lamp. E40,760 $219.50

(B) Short Wave Lamp Without Shield. E40,757 $219.50

(C) Long Wave U.V. Light With Tubular Filter.

Ideal for long wave fluorescent inspection. It converts short wave to long wave length. 4¾" long. E70,298 $299.50



POWER SUPPLY & OSRAM LAMPS

Power Supply & Adapter Operate All Osram Lamps. Use for lamps below. Features a power select dial & includes medium prefocus socket holder. Shield & wide scale meter 115VAC, 50/60 Hz, 7.5amps. Wt.:30 lbs. E85,239 $769.50

Line Spectrum Lamps By Osram Meet A Variety of Needs. 102mm x 21mm O.D. 9-pin DIN base. Light center length of 43mm #1mm. center of arc to bottom of base with no readjustment during operation. Outer bulb lights emit spectra.

Cadmium	C41,245*	$179.50	Thallium	C41,234	$272.50
Merc. Hg 10	C41,242	187.50	Cesium	C41,244	298.50
Merc. Hg 12	C42,241*	272.50	Helium	C41,243	219.50
Merc. Hg 13	C41,240	296.50	Sodium	C41,237	249.50
Potassium	C41,238	272.50	Neon	C41,236	259.50
Rubidium	C41,235	296.50	Zinc	C41,233	282.50

***Outer envelope window permits S.W. radiation.**

PRECISION SPECTROSCOPE: A STURDY TABLE TOP INSTRUMENT

Equipped with a scale in Angstroms. To observe solar spectrum, use a cloud & the adjustable slit. Will detect Ca, Pa, Sr, Li, K, Na, Rb, Cu, Etc. by flame emission. As slit is closed, prominent Fraunhofer lines appear. In lab, source is placed in front of slit and light from lamp directed in scale. 16" x 10" x 9". Weighs 7 lbs.

Spectroscope C72,411 $494.50

SPECTRUM POWER SUPPLY

For delivering the voltage necessary to light spectrum tubes & an integral stand to hold them. Specially designed 5000 V, 7 mA maximum transformer with an off/on switch & heavy-duty 3-conductor 6 ft. cord set. 3⅛" x 6¼" x 21".

Power Supply C71,559 $279.50

Low Cost Spectrum Tubes For Spectrum Comparison Analysis. 10cm long. **Ea. $41.50**

F60,906 Hydrogen
F60,907 Helium
F60,912 Oxygen
F60,909 Argon
F60,911 Nitrogen
F60,910 Neon
F60,913 Water Vapor
F60,914 Carb. Diox.

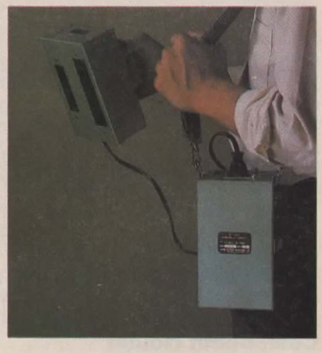
Krypton	C60,915	$44.50
Xenon	C60,916	$58.50
Mercury Vapor	C60,908	$44.50

LONG & SHORT WAVE UV UNIT FEATURES ONE-HAND OPERATION

Each dual wavelength lamp has its own switch for independent operation. Shortwave: 2537A; longwave: 3660A. 115 VAC. Includes separate filters for peak transmission.

UV Unit C70,259 $179.50

Battery Adapter Case C70,260 $79.50

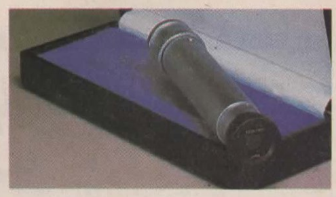


Extreme care is given to each order we receive. It will be checked and re-checked to insure its safe arrival. But, if damage or discrepancy should occur, Call: (416) 787-4581

HAND HELD SPECTROSCOPE WITH PRISM

Palm-sized 4¹³⁄₁₆" stainless steel spectroscope has a variable slit for precise image definition. Features an adjustable focus. Determines relative light frequency emissions. Excellent as a hand-held instrument; suitable for use as a teaching tool.

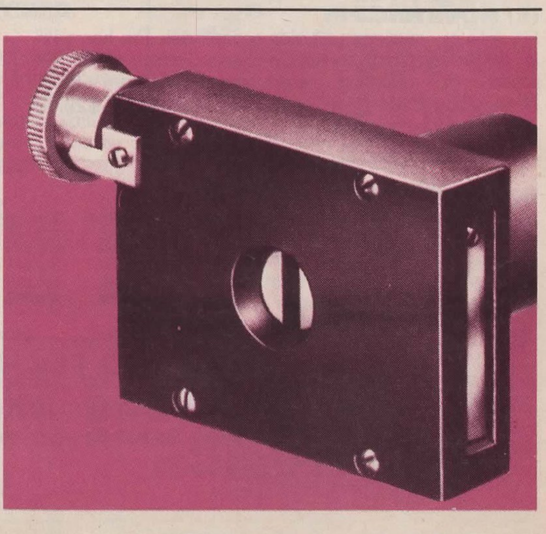
Spectroscope E42,586 $229.50



OPTICAL SLIT

Here is a high-quality optical slit of micrometer precision. For use in high level spectroscopy, or whenever an extremely accurate adjustable slit is required. Opens equally from center and has jaws with 0-6mm usable opening. Tube dia.: 23.9mm. Length: 28mm. Slit: 1 cm.

E40,488 $484.50



SOUNDPACER

SPEED LEARN FROM CASSETTES WITH THE SOUND PACER. IT CUTS YOUR LISTENING TIME IN HALF WITHOUT MISSING A WORD

Review that important conference or lecture. Increase your learning efficiency. Compact (8¾" × 5¼" × ¾"). Battery operation (6 "AA" cells) or AC with built-in transformer and detachable cord. As tape speed increases, the distortion does not. Sound pacer also lets you slow tape to 90% of normal speed. It also records and has built-in microphone, tape counter. Takes standard cassettes. Demonstration cassette included.

Soundpacer	C16,015	$284.50
Car Adapter	C34,093	$24.50
Microphone with Remote Control	C35,700	$28.50
Footswitch	C35,702	$24.50

DOUBLE SPEED TAPE COPIER SO YOU CAN HAVE YOUR OWN TAPE FACTORY

Copy any cassette in half time to build a library of tapes from a friend's collection or an extra set of your favorites for car, office or vacation home. This top quality copier is also an AM/FM radio, regular cassette recorder with cue, review, microphone jack, extra speaker jack, tape counter and 7 segment LED indicator. Powered by AC plug or 6 "D" batteries (not included). Has four 2-way speakers. Measures 30" x 11" x 6½".

Double Speed Tape Copier	C33,118	$339.50

POWERFUL LIGHT POINTER

This is a plug-in very **powerful hand light pointer** with transformer built in and protective insulation. Will project a bright arrow at a distance of over 30 ft.

	C49,731	$79.50
2 replacement bults	C49,732A	$15.50

MINIATURE LIGHT POINTER

And this is a **palm light pointer** measures only 1½" x 1¼" x 1¾" and will project an arrow at over 15 ft. Needs only two AA batteries.

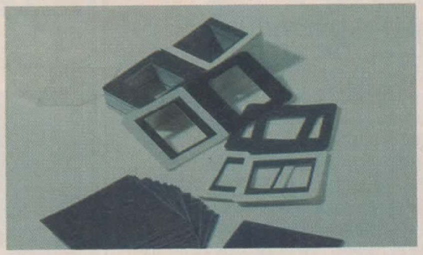
	C49,733	$15.95
2 extra bulbs	C49.734A	$8.50

AUTOMATIC REPEATING CASSETTE NEVER STOPS

You hear the same recording every 12 minutes. Works on recorders with capstan drive. Tape is continuous so you must not use FF or review.

Cassette	C34,192	$12.50

AUTOMATIC REPEATING CASSETTE



SLIDE KIT TURNS PICTURES INTO SLIDES IN MINUTES!

Makes 2" x 2" slides from coated paper magazines or books. Includes mounts, viewfinder, film, burnishers, sponge, and instructions.

Slide Kit (10 slides)	E41,794	$21.50
Deluxe Kit (75 slides)	E41,793	$58.50

COMPLETE SOUND EFFECTS LIBRARY ON ONE LP RECORD

Inject new life into those stale video and audio productions with realistic sound effects. Nearly 100 different effects. Title themes, locations sounds, special effects and more.

E34,423	$24.50

Audio/Video Soundtrack Masters

IT CAN BE SEEN ON A TV SCREEN

Here's a flashlight pointer so bright and sharply focused that its high intensity arrow of bright white light can be seen up to 30 feet away in lighted areas . . . even on a television screen. The arrow can be seen up to 75 feet away in dark rooms. Hand-held 6½" pointer weighs five ounces. Takes four "AA" batteries (not included).

Flashlight Pointer	E33,081	$29.95
Two Extra Bulbs	E34,187A	$12.75

TELE-SLIDE CONVERTER TRANSFERS STANDARD SLIDES ONTO VIDEOTAPE

Only requires slides, videocamera and VCR to work. Slides may be cropped, color intensity corrected and more during transfer process. With filters, create special effects. Zoom 1 to 2X. Requires T mount.

E33,535	$176.50

Please specify camera make and model add $19.95 for T mount

PUT YOUR OLD HOME MOVIES AND SLIDES ON VIDEO

Easily convert movies and slides to vieotape. Set your movie or slide projector and focus the image onto the mini-screen on the front of the Tele-Cine converter. Aim your video camera into the lens. Focus and start recording. Can be used with any video camera. 6½" x 5½" x 5". Screen is 3" x 3½".

Tele-Cine	E33,528	$132.50

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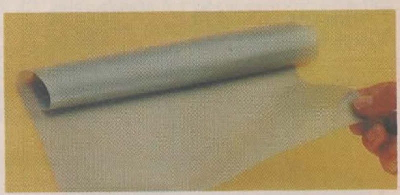


SPECIAL PROJECTION SCREEN MATERIAL LETS YOU VIEW FILMS AND SLIDES IN BRIGHT DAYLIGHT

Made of light-spreading transparent microcells. Permits audio visual presentations to be made in daylight. Elastic and flexible. Resists fire, yellowing and fungus. Reversible.

1′ × 1′	E70,934	$19.50
3′ × 3′	E70,935	$119.50
6′ wide sheet	E2508	$81.50 **per foot**

GLASS REAR PROJECTION SCREEN

Replace ground glass with this gray glass screening. Provides extreme contrast, sharp, clear images and better diffusion.

20″ × 24″ × ⅛″	E85,002	$176.50
10″ × 12″	E70,047	$61.50

Projectors

PROJECT A LARGER IMAGE

10″ x 10″ Opaque Projector enlarges sketches or printed material up to 52″ x 52″ at 10 feet from print to screen. Sturdy, yet has lightweight aluminum body. Two extra large quiet fans keep copy cool. Friction focusing sliding tray can be removed to handle print matter that's larger than 10″ x 10″. Includes 500 watt Tungsten Halogen 400-hour life bulb. Eight foot cord. 15″ x 22″ x 16″. Weighs 22 pounds.

10″ × 10″ Projector
C34,121 $795.50

Book Tray. Allows thick books to be inserted without lifting the projector. C34,125 $224.50

SHOW OFF PHOTOGRAPHS

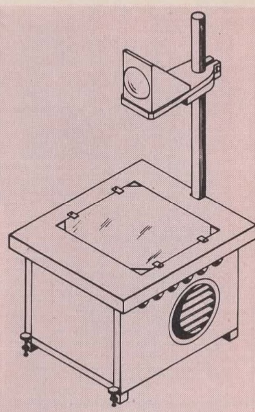
Top loading 5½ × 5½″ Seerite opaque projector delivers superb results. Color corrected camera quality three element, f3.5/200mm lens. Enlarges from 3X to 20X original size. Comes with 300 watt ELH Mirror reflector bulb. 8½″ × 8″ × 15″; 13½ lbs.

Projector E72,443 $575.50
Vinyl Case E71,444 $86.50

35MM 500 WATT SLIDE PROJECTOR... ONLY $39.95

Has a rotary magazine that holds 12 Instamatic or 35mm slides. High resolution, 3″ f.l., f/3.5 coated anastigmat lens is distortion-free. Gives much larger screen image at shorter projection distances than standard 4″ or 5″ f.l. lenses. Ideal for half frame slides. Sturdy polystyrene case. 4¾″ x 7⅞″ x 10¾″. 8 ft. detachable cord.

Projector E71,001 $98.50



EDMUND OVERHEAD PROJECTOR KIT

Everything you need to build a 10″ x 10″ projector; you add the wood. Includes 11½″ sq., 5½″ f.l. double Fresnel condenser lens (plastic); two 88mm dia. meniscus lenses (15″ E.F.L., f/3.5); 4″ x 6″ mirror; cooling motor with 3½″ fan blade; power cord; 500W quartz-iodine lamp and socket; power switch-reflector; instructions.

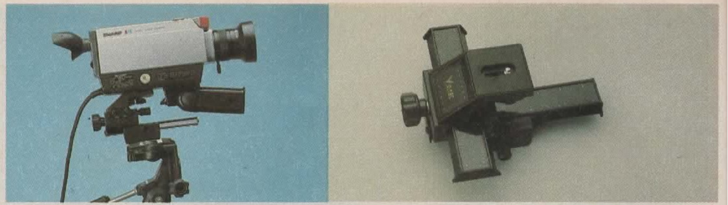
Edmund Overhead Projector Kit
E70,966 $176.50

NOW YOU CAN SEE YOUR 35MM SLIDES ON A 9″ X 8″ VIEW SCREEN

Eliminates the need to darken the room and set up a screen with this self contained, portable slide viewer. The 8″ × 8″ table top viewing screen gives a crystal clear reproduction of up to 40 35mm or 2″ × 2″ slides with no magazines required. The slides-transporter is operated manually. Aspheric condenser system with heat protection filter. This is the largest screen available in a portable slide viewer, yet it folds to a compact 6″ × 9″ × 11″. 110 VAC.

Slide Viewer
E31,936 $299.50

Photography



MICRO FOCUS CAMERA BALANCE ADJUSTER

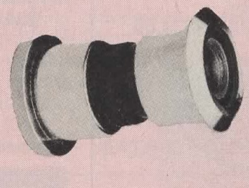
Designed for maximum camera balance in any position. Precision rack and pinion gears accurately move a camera back and forth for close-up photography without need to move camera lens or tripod. Adjuster also maintains the parallel degree between the camera and the subject. Die cast aluminum construction. Positive locking. Both rails separate and can be used independently. Black satin finish. Maximum 3.5″ (9 cm) camera movement. Weighs 22 ounces (630 grams). An ideal copy stand. Provides maximum composition accuracy. XY axis travel. Precision calibration engravings on both rails. From Japan.

Micro Focus Adjuster C34,766 $75.50

35MM OR VIDEO MIRRORSCOPE SPY LENS

Allows you to point in one direction but photograph at a 90 degree right angle to the side. For use with telephoto lens 85mm f.l. or longer. 2¾″ diameter; 3⅜″ length. Weighs four ounces. Mounts onto SLR lens with adapter rings listed below.
E35,384 $91.50

Adapters $4 each. 49mm F35,387; 52mm F35,388; 55mm F35,389, 58mm F35,390; 62mm F35,391; 67mm F35,392.



Make A Fisheye Lens From Your Dustcap! Simply drill a hole in the dustcap, insert rear tube of viewing lens and glue in place. The 2 in. by 1 in. scope delivers a sharp 175° image with a regular 50 mm lens.

Fisheye
E42,169 $28.50

TRIPOD ADAPTS TO YOUR DEMANDS

Multi-use tripod can be hand-held, used as a window mount or as a standard tripod. Can be mounted on standard camera tripods by threading the socket onto tripod's ¼ x 20 mounting screw. Sturdy black metal construction.
C34,277 $19.95

4 SECTION UNIPOD

Helps hold cameras, VCR's etc. steady while in use. Three-section pod is 24.2″ when closed. Extends to 61.6″. 1″ leg width with two grooves for additional strength. 1.8″ x 2.2″ pan head with fixing pin for video camera use. When used for SLR, pin automatically sinks. 17.5 oz.
C35,381 $35.50

10 SECTION EXPANDING TRIPOD

Tripod expands between 7½″ and 42½″. 12 sections with speed lock. Three-way pan-head. Comes with vinyl case. Easy to set up, use and take with you. Black.
C35,383 $64.50

STEREO VIEWERS MAKE INTRICATE WORK EASIER

Study details on photos, maps and field work. Folding legs and case. Full coverage for prints to 5″ x 5″. Interpupillary range is 55-80mm.

2X Viewer C42,118 $39.95
4X Viewer C42,651 $44.95

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Science & Technology Agora
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Toronto, Ont. M6A 3A4
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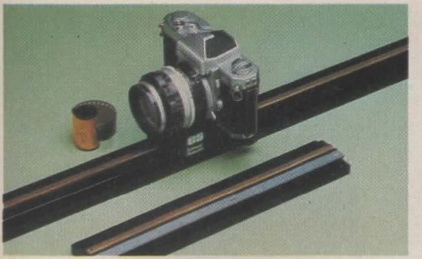


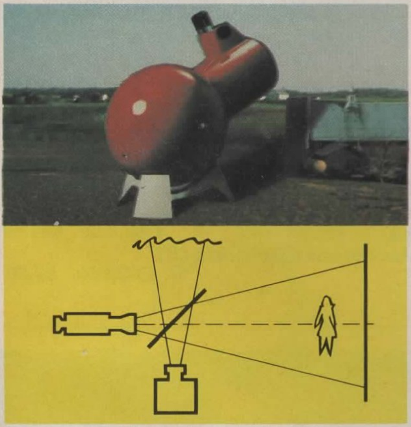
RACK AND PINION SLIDE FOR PRECISE LINEAR POSITIONING OF CAMERAS

Platform is a dovetail fit with two-foot section of extruded aluminum track. Thumbscrew locks platform in position. With mounting hole for camera. Non-corrosive track.

Platform And 2ft. Of Track **E34,105 $184.50**

1ft. Section of Extra Track. Comes with 1/100″ and 1/10″ Scale Graduations. **E31,241 $98.50**

1ft. Section of Extra Track. Without Scale. **E61,285 $81.50**



BEAM SPLITTERS CREATE TRUE-TO-LIFE PHOTO BACKGROUND

Great photo effects technique, especially when combined with a front projection system. Use this effectively with movie cameras and SLR's. R/T means Reflectance/Transmittance.

Number	R/T	Size	Price
D61,097	30R/70T	5″ × 7″	$39.50
D72,500	30R/70T	10″ × 14″	109.50
Anti-Reflective Coated:			
Number	**R/T**	**Size**	**Price**
D61,260	40R/60T	5″ × 7″	$49.50
D72,502	40R/60T	10″ × 14″	119.50

ENLARGING LENSES

(f.l. 45 mm, covers 0.1″ × 1″ × 1″, f/2.8, not mtd.)
E42,201 $47.95
(f.l. 163mm, covers 5″ × 7″, f/4.5 anast.)
E42,652 $109.50

YOUR COMPLETE INDEX IS ON PAGE 111

THROW THIS PELICAN CASE INTO ANY POND, AND EVERYTHING INSIDE REMAINS DRY

Totally waterproof and breakproof case. Manufacturer guarantees against leakage or breakage...even when submerged to 10 ft. 17½″ x 11⅞″ x 6½″. Injection molded. Foam inserts can easily be cut to camera, lens shapes, etc.

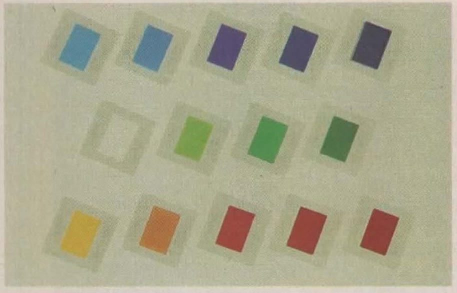
Stock No.	Size Inner	Dimensions	Price
C49,608	Small	12¼″L×9¼″W×5½″D	$139.50
C49,535	Medium	17⅞×11¾″×6½″	$199.50
C49,609	Large	22″×17″×8″	$324.50
C49,610	Ex. Long	50″×11¾″×6½″	$379.50

TELESCOPE OBJECTIVE/BAUSCH & LOMB COPY LENS

8¼″ f.l. coated lens system, iris diaphragm f/4.5-f/8, 2½″O.D. × 2″L, coverage 6 sq. in.; telescope objective for RFT. **E41,484 $23.50**

Zoom 8mm Projection Lens/Magnifier. 19-25mm f.l. f/1.6, alum. barrel ⅞″ dia. × 1½″L. Magnifier in reverse. **E40,874 $18.95**

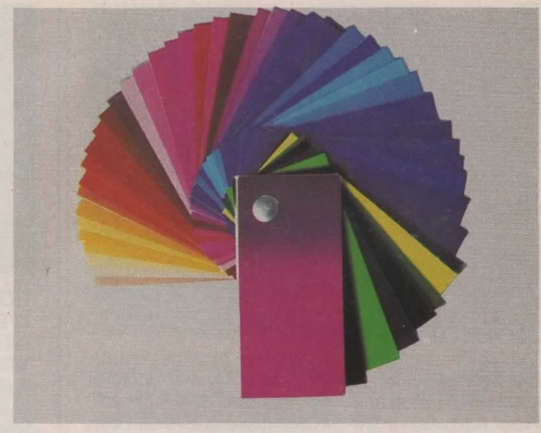
8.5mm Movie Camera Lens, Fairchild Cinphar. 13mm f.l., iris diaphragm f/1.8-f/22, alum. barrel 1.025″ dia. × 1″L, mount thread ⅝″, focuses 1½′ to infinity. **E41,146 $29.50**



NEW COLOR FILTER SLIDES FOR 35MM CAMERAS

Use your imagination to devise unique and interesting photographic effects with your 35mm camera. Fourteen different colors all mounted on 2″ x 2″ slides. Colors are: light blue, medium blue, daylight blue, dark blue, golden amber, medium green, light green, yellow-green, light red, medium purple, orange, medium yellow, medium red and frost.

Color Slide Effects Kit E34,517 $35.95



EASY-TO-CUT TRANSPARENT FILTERS

Heat resistant 0.0005 to 0.01 inches in thickness. Colors are vibrant & fine for striking photographic effects. Booklets and separate sheets available. Order sheets by number.

F82,010 Gold Amber; F82,039 Dk. Urban Blue; F82,031 Daylight Blue; F82,034 Dk. Med. Blue; F82,038 Lt. Med. Blue; F82,000 Frost; F82,040 Light Green; F82,041 Med. Green; F82,043 Yellow Green; F82,004 Med. Lemon; F82,012 Orange; F82,029 Med. Purple; F82,015 Med. Red.

20″ × 24″ Filter Sheets $8.95 each.

Book of 44 Filters (each a different color)
5″ × 8″ F60,403 $32.95
8″ × 10″ F70,638 $49.95
1½″ × 3¼″ F40,675 $5.95

Book of 6 Filters (red, green, blue, cyan, magenta, yellow)
8″ × 10″ F60,373 $14.95
2″ × 2″ F40,676 $3.95

Book of Spectral Curves (for all above filters)
E9081 $5.95

OVERSIZE FILTER SHEETS

Generous 12″ x 22″ filter sheets for photographic effects, striking home lighting displays, theatricals; light shows, etc. Sheets are approximately 0.2mm in thickness. Can be easily cut. Use them singly or in color combinations for one of a kind effects. Surplus.

Blue Filter Sheets. Package of two. **E35,135 $18.50**

Green Filter Sheets. Package of two. **E35,136 $18.50**

Red Filter Sheets. Package of two. **E35,137 $18.50**

LAMINATED GLASS FILTERS

Two pieces of plate glass with plastic filter in center. Outside: 7¾″ diameter. Inside: 7″ diameter (approximate). ½″ thick. Surplus. **$23.50 each**

Amber E34,791 **Red E34,792**

ORDER BY PHONE
416-787-4581

FLOCKED PAPER

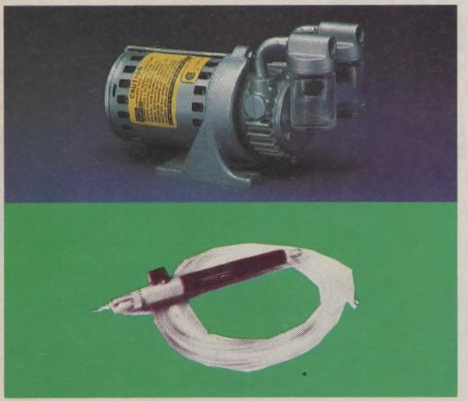
Velvet-like, non-reflecting surface provides countless light traps, far superior to flat paint. Variety of colors. Adhesive and non-adhesive backing.

Non Adhesive 20″ × 26″ Sheets. #40 basis paper. Pkg. of 2. **$11.95**

Black	**F60,068**	**Red**	**F35,141**
Gold	**F35,142**	**Brown**	**F35,143**
Blue	**F35,144**	**Silver Gray**	**F35,145**

Pressure Sensitive 20″ × 30″ Sheets. #55 Coverweight. Adhesive backing.

	Two Sheets		50 Sheets	
Black	**F70,621**	$14.95	**F70,622**	$279.50
Emerald Green	**F35,146**	$14.95	**F35,147**	$279.50
Red	**F35,148**	$14.95	**F35,149**	$279.50



VACUUM PICK-UPS

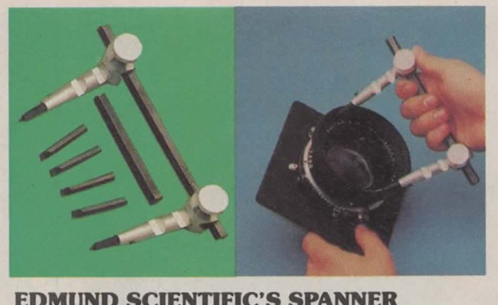
Surplus Vacuum Pump—American made pump, new, was designed to sell for $100. Now $137.50. Thermally protected. 1/20HP, 1600/1300 RPM, 115V, 60/50Hz. 1.1CFM at 0″ air compression rating. Vacuum pump is 1.1CFM at 0″ HG of mercury. 20″ HG max. continuous. ⅛″ NPT female inlet and outlet. 8 lbs. **E34.751 $137.50**

Vacuum Pick-Up Tool—Attaches to most suction motors. 5″ long. Metal and plastic body. 40″ flexible tubing. Collect small, delicate items, including lenses, prisms and metals. Use to hold small items during touchy assembly projects. With one tip. **E33,459 $229.50**

ABSORBER COATING OPTICAL PAINT

One-part, flat black aerosol paint is designed for high temperature, non-wear use. Unaffected by temperatures up to 1000°F on aluminum surfaces. Cures in 4 hours at 400°F. Absorption −0.96 integrated over a wavelength range of 0.35 to 2.15 microns. Emittance −0.86 on aluminum substrates.

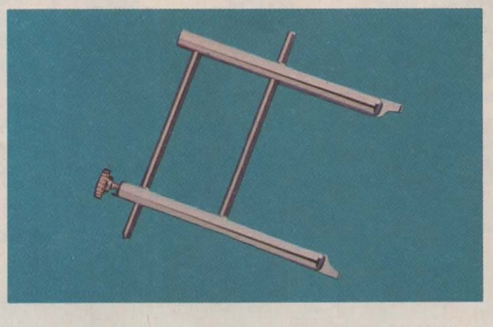
3M Optical Paint (Four 10oz. cans)
E34.107 $175.50
E34107A $49.50 ea.



EDMUND SCIENTIFIC'S SPANNER WRENCH SET QUICKLY AND EASILY REMOVES RETAINING RINGS WITHOUT DAMAGE.

Fully adjustable set with the strength to easily remove stubborn retaining rings without causing damage. Spanner wrench is adjustable from ½″ to 7″. Hex-bodied tips slip into hex-hollowed arms and lock securely with set screws. Strong, sturdy aluminum bodies and locking knobs. Easy to assemble wrench includes three sets of 7/32 tips—straight shank and round tip—which fit most retaining rings. Other tip shapes can be ground to suit your individual needs. Includes 3½″ and 7″ high tensile steel hex bars, and set of adjustable arms, 3½″ to 3″ below wrench body.

Spanner Wrench Set E70,751 $109.50



ADJUSTABLE MINI SPANNER WRENCH

High grade steel set with chrome blades and thumbscrew locking. ⅜″ diameter and 3⅞″ long. Two 3/16″ diameter slide bars allow for quick changing of the span to meet the job at hand. Range: closed to 4⅝″ with ⅜″ offset tips in place. Spring loaded 3/16″ steel balls for quick changing of tips. Includes five sets of tips: straight pencil point; straight flat; ⅛″ offset; ¼″ offset; ⅜″ offset. Vital for use with optical instruments and for removing lock rings.

Mini Spanner Wrench D31,817 $76.50

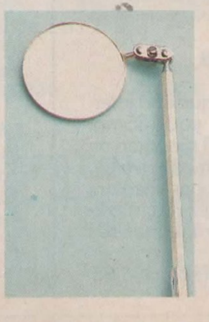
ORDER BY PHONE
416-787-4581

INSPECTION MIRROR

15/16″ mirror will withstand extreme temperatures. 6½″ arm size. Non swivel. For examining hard-to-see places.

Standard Mirror C60,004 $9.95

Magnifying Mirror C60,005 $10.95



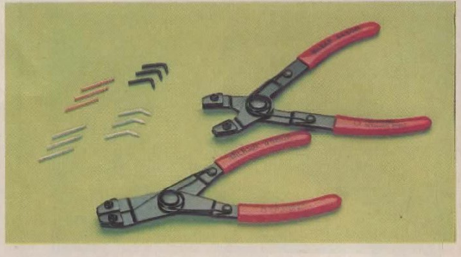
ALL-ANGLE MIRRORS

Double ball joints swivel mirrors 360° for inspection of hidden areas. Tempered steel spring joints. Chrome-plated handles.

Number	Price	Mirror Size	Arm. Size
E60,014	**10.50**	2¼"	7-13"
E60,010	**11.50**	3½x2-1/8"	11¼"x15¼"
E60,012	**8.95**	1"x2"	6"
E60,013	**7.50**	1¼"	8"
E60,011	**13.50**	¾"	7"

*Telescoping Handle non-swivel

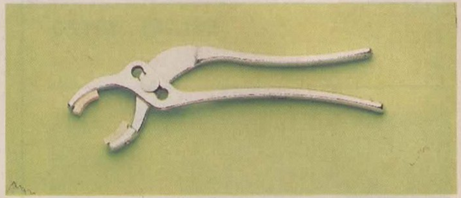
YOUR COMPLETE INDEX IS ON PAGE 111



RETAINING RING PLIERS KIT

Replaceable tip pliers kit makes snap ring placement & removal simple. Set includes one internal & one external pliers with vinyl grip handles and 2 pairs each of color-coded tips: 90° angle (.03″ dia.); 45° angle (.047″ dia.); straight angle (.047″ dia. & .063″ dia.). Also includes convenient plastic carrying case.

Pliers Kit C42,625 $36.50

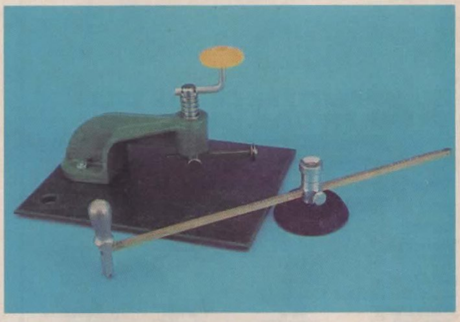


SLIP JOINT SOFT JAWED PLIERS

The 3 position pliers loosen or tighten rings on lenses from ½″ to 2½″ dia. Nylon non-slip cushions in jaws protect fine knurling and delicate finishes. 9¼″ long. Strong cadmium-plated steel.

Pliers C60,832 $46.50

Replacement Cushions (2) C30,664 $9.50



LENS AND GLASS CUTTERS

Small Circle And Lens Cutter—Cuts circles from ½″ to 5″ in diameter. Graduated rod adjusts cutter to circle size. Turret has three easy to replace cutting wheels. 8″ × 6″ × 5″. **E35.196 $99.50**

Replacement Turret E35,197 $13.50

Large Circle Cutter—Cuts circles from 3″ to 16" in diameter **C35.191 $27.50**

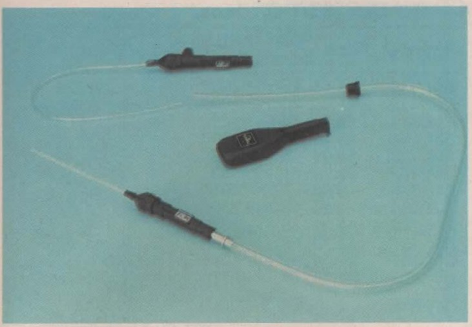
CARBIDE OR DIAMOND TIPPED SCRIBER—Can be used on hardest metals, glass, jewels, etc. Slim line design comfortable to use.

Carbide Tipped	**C49.305**	**$7.95**
Diamond Tipped	**C49,306**	**$9.95**

TUNGSTEN CARBIDE DRILLS

Drill bits glide through any glass product effortlessly.

1/8″	C41,517	$6.50
3/16″	C41,518	6.75
1/4″	C41,519	7.95
5/16″	C41,520	8.95
3/8″	C41,521	9.95
1/2″	C41,522	10.95



BLAST AND VAC AWAY DUST AND DIRT

Continuous triple-filtered blasts from Dust-Off II Kit keeps damaging lint, dust and dirt from affecting computer systems, camera lenses and jewelry. Mini Vac accessory and extender work to keep hard-to-reach spots free and clear of build-up. 12 ounce canister of Dust-Off II plus the accessories. Stat-Off II attachment (available separately) neutralizes static electric charges.

Dust-Off II Kit	C33,397	$71.95
Dust-Off II Refill Canister	C33,398	$10.50
Stat-Off II Accessory	C33,399	$32.50
Dust-Off II Dual Extender	C35,416	$16.95
Dust-Off II Mini-Vac	C35,417	$20.50

ANTI-STEAM, ANTI-FOG STICK

Everclear dry chemical compound will keep glass, plastic and plexiglass clear of steam, fog and frost for several days per application. Non-toxic and non-abrasive stick cleans, polishes and protects glass and plastic against dirt, grease, lint and fingerprints. One stick will last a year on eyeglasses.

Everclear Stick	E35,162	$12.95
	E35,162A	2 For $23.95

DON'T JUST BLOW AWAY DUST! VACUUM IT WITH MINI-VAC, THE TOOL WITH 100 USES

Revolutionary tool is designed to remove minute particles of dust and debris from hidden or hard to reach places. Unlike compressed air which simply disperses pollutants, this powerful micro-cleaner vacuums them away. Mini-Vac is equipped with two interchangeable wands, two fine bristle brushes, and a cloth vacuum bag. Powered by a single nine volt battery. Compact, portable, versatile Mini-Vac is perfect for delicate areas such as cameras, lenses, negatives, slides, enlargers and projectors. Ideal for computers, electronic toys and gadgets, typewriters, stereo equipment and around the house. Goes everywhere and gets into everything. 5⅛" long and 1¼" in diameter. Vacuum and blower capability. Does not require additional refill cans or bags. 90 day manufacturer's guarantee.

Mini-Vac	C33,806	$22.50

SOFT LENS BRUSH

Preserve fragile lenses from dust. This brush gently removes dust and lint from lenses. 1 inch long with retractable bristles. Plastic case 2¼" x ¾".

Lens Brush	
C40,504	$4.50
C40,504A	2 For $8.50

PROFESSIONAL OPTICAL LENS CLEANER

CLEAN YOUR LENSES WITH LENS SITE

Water soluble cleaner is specially formulated for removing dust and dirt from plastic and glass surfaces. Anti-fog and anti-static. Easy-to-use paste can be used on coated or uncoated lenses. Increases light penetration. One ounce jar.

Optical Lens Cleaner	E34,183	$23.95

OPTICAL ADHESIVE

Clear, colorless liquid photopolymer that will cure when it's exposed to ultraviolet light. Excellent for bonding surfaces of light-activated optical elements. Designed for bonding or mounting compound lenses, fiber optics, etc. 1 oz. squeeze bottle.

Adhesive	E42,192	$28.95
Fluorescent Blacklight	E34,501	$47.95

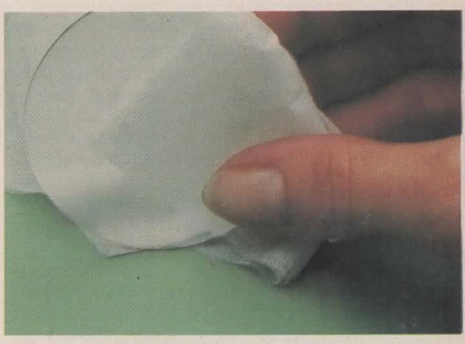
Dust-Off
Junior

DUST OFF JUNIOR

The answer to troublesome dust. Dust Off cleans off almost anything without touching it. It's a strong burst of clean, dry Freon® gas. No residue, moisture, or fingerprints. Removes dust from cameras, slides, stereos, lab equipment, delicate instruments, etc. Weighs 270 gr.

Dust Off Junior	
C42,980	$8.95
400 GR.	
C42,980A	$10.50

YOUR COMPLETE INDEX
IS ON PAGE 111



TOP QUALITY LENS CLEANING TISSUE REMOVES DIRT AND FINGERPRINTS WITHOUT SCRATCHING

Made specifically for optical instrument lenses and objectives. For all delicate lens surfaces. Meets military specifications. Two convenient sizes. 500 sheets per pack.

7¾" × 10¾"	E736	$39.50
7¾" × 4"	E60,375	$19.50

EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4
(416) 787-4581

LENS LUSTER
LENS LUSTER
DUST-OFF
JUNIOR

OPTICS CLEANING SET

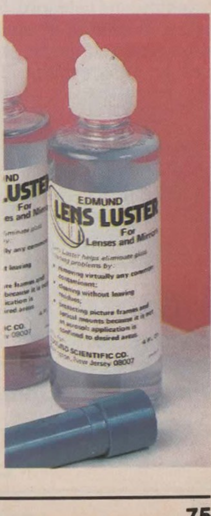
Keep your expensive optical collection in top notch shape with these handy cleaning aids. Set includes our 1" long soft lens brush which gently removes dust and lint, 500 of our specially designed optics cleaning tissues, a can of Dust-Off Junior and two 4 ounce bottles of Lens Luster cleaner.

Optics Cleaning Set	E42,697	$39.50

OPTICAL CLEANING FLUID

Set contains six 4 oz. bottles of Lens Luster cleaning fluid. Cleaner is specially formulated for high quality optics, and will not evaporate.

Cleaning Fluid (6 bottles)	
E61,200	$36.50
Case of 24 Bottles	
E35,883	$109.50
2 Bottles	
E61,200A	$14.50



ORDER BY
PHONE
416-787-4581
OR BY TELEX:

OFF THE SHELF OPTICS

Edmund Scientific's inventory of optics is one of the largest and most diversified in the nation. It consists of in-house manufactured items, first line quality lenses that are produced to our specifications as well as optics that have been purchased as contract terminations, overruns or excess custom commercial items.

CATEGORIES

Lenses are offered in two major categories to assist users in rapidly identifying optics best suited to a particular need, ie OEM components vs research or prototype elements.

COMMERCIAL. Commercial lenses are standard design optics, immediately available in large quantitites. All items in this group are Grade One grading. We recommend these optics to OEM accounts and volume users because of available inventory and designs which insure that the majority of lenses will remain as "open items" in the foreseeable future. An outstanding example for OEM application is that portion of our commercial line designated as "TECHNICAL SPEC LENSES."

EXPERIMENTAL. Lenses are classified as experimental if they are available in only moderate quantity, or if a design has been determined special enough so as to be inordinately expensive to reproduce. Other lenses fall into this category as a result of our quality control procedures, see Grading. Overall, experimental lenses have been widely accepted for low volume requirements, prototype or research use, start-up and initial run operations & single unit applications.

GRADING

We provide initial guidance to users by describing our optics as COMMERCIAL or EXPERIMENTAL. Additional specifics are offered by our grading procedure.

GRADE ONE. Lenses in this group are standard optical glass components, edged, free of observable scratches, chips, stains or oxidation. They possess the characteristics anticipated in commercially purchased optical components. All lenses in our "COMMERCIAL" category are Grade One (C-1).

GRADE TWO. These lenses may be unedged, made from non-optical glass, have small chips or nicks around the edges, and if coated, may have slight stains or coating irregularities. These possible characteristics do not substantially detract from the optical function. (E-2)

GRADE THREE. This group may have, in addition to Grade Two characteristics, larger edge chips or light oxidation. They are optically useable and well suited to various production and experimental providing cosmetic consideration do not restrict their use.

SUBSTITUTIONS

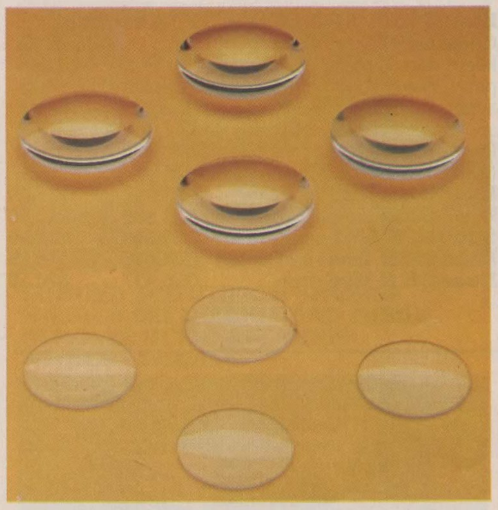
We do not substitute for Commercial lenses. In the Experimental category, however, we do reserve the right to substitute an optically equivalent lens of the same type and grade, so long as the diameter and focal length are within 10% of the specifications in the current catalog. Supply a sample if you are requesting a large or special order.

TOLERANCES

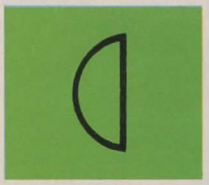
Dimensions for lenses are in millimeters (25.4=1 inch). Diameters and focal lengths are rounded to the nearest whole millimeter.

ORDER FROM US DIRECT

Efstonsciene has only one location, and services all orders directly from our Toronto, Ontario premises.



SIMPLE LENSES are single optical components made of one piece of glass, and used as magnifiers or reducers, elementary imaging devices, condensers of dispensers of light, or as components of compound systems. Because there are no differential diffraction considerations, simple lenses are often used in laser applications.



PLANO-CONVEX LENSES (PCX)

Plano-Convex Lenses (PCX) have one flat and one outward curving face and positive F.L. They can magnify or condense.

COMMERCIAL PCX

Number	Price	Dia. (mm)	F.L. (mm)	Grade	Comments
E32,402	18.50	5	3.8	1	CTD
E32,403	18.50	5	4.6	1	CTD
E94,725	16.25	5	8	1	
E32,469	14.50	6	9	1	
E32.470	15.75	6	9	1	CTD
E32,471	14.50	6	12	1	
E32,472	15.75	6	12	1	CTD
E32,404	18.50	5.4	13.3	1	CTD
E32,009	14.50	9	13.5	1	
E32,010	15.75	9	13.5	1	CTD
E94,007	14.75	10	17	1	
E32,473	14.50	6	18	1	
E32,474	15.75	6	18	1	CTD
E32,008	14.50	9	18	1	
E31,854	15.75	9	18	1	CTD
E94,749	15.25	10	18	1	CTD
E32,006	14.50	12	18	1	
E32,007	15.75	12	18	1	CTD
E94,833	13.75	8	19	1	CTD
E94,766	9.95	4	21	1	
E32,004	15.75	15	22.5	1	
E32,005	17.00	15	22.5	1	CTD
E94,907	15.75	19	23	1	
E32,011	14.50	12	24	1	
E31,855	15.75	12	24	1	CTD
E32,001	15.75	18	27	1	
E32,002	17.00	18	27	1	CTD
E32,185	13.75	11	30	1	CTD
E32,003	15.75	15	30	1	
E31,856	17.00	15	30	1	CTD
E32,000	15.75	18	36	1	
E31,857	17.00	18	36	1	CTD
E94,853	15.95	21	40	1	CTD
E94,910	17.50	23	41	1	
E32,477	16.95	25	50	1	
E32,478	18.75	25	50	1	CTD
E32,483	17.50	30	50	1	
E32,484	19.25	30	50	1	CTD
E94,152	18.25	16	55	1	
E94,832	18.25	32	58	1	
E32,405	18.95	33	58	1	CTD
E32,479	16.95	25	75	1	
E32,480	18.75	25	75	1	CTD
E32,485	17.50	30	75	1	
E32,486	19.25	30	75	1	CTD
E32,346	23.75	40	76	1	
E94,164	13.75	17	79	1	
E94,851	21.95	51	81	1	
E31,833	9.50	8	94	1	
E32,475	16.95	20	100	1	
E32,476	18.75	20	100	1	CTD

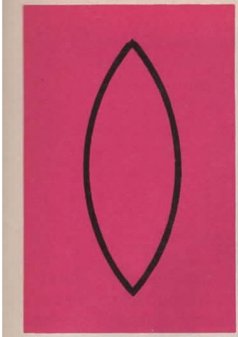
COMMERCIAL PCX (con't)

Number	Price	Dia. (mm)	F.L. (mm)	Grade	Comments
E94,931	16.75	25	100	1	
E32,487	17.50	30	100	1	
E32,488	19.25	30	100	1	CTD
E32,153	23.75	50	100	1	
E95,738	12.95	15	112	1	
E94.102	22.75	31	152	1	
E95,176	9.50	6	201	1	
E31,834	9.50	8	230	1	
E94,748	17.75	33	233	1	
E94,127	33.75	89	305	1	
E94,131	21.50	44	401	1	
E94,135	45.75	86	571	1	

EXPERIMENTAL PCX

Number	Price	Dia. (mm)	F.L. (mm)	Grade	Comments
E32,237	10.25	3	7	1	
E32,171	8.25	5	15	3	
E32,443	12.75	10	15	1	CTD
E94,806	9.50	7	16	2	
E32,376	10.25	11	17	1	
E32,186	13.95	13	20	1	CTD
E94,829	9.50	7	22	2	
E94,906	10.25	17	23	2	
E32,377	11.25	13	24	1	
E32.247	9.95	14	32	2	
E94,913	11.50	32	35	2	
E32,162	19.75	49	35	2	
E95,034	8.25	14	36	2	
E95,029	8.25	14	40	2	
E95,040	11.25	16	40	2	
E94,933	12.00	20	42	2	
E31,573	11.25	30	47	2	
E32,154	11.75	40	47	2	
E94,904	9.75	5	51	2	
E94,898	12.50	31	51	2	
E32,379	12.75	24	54	1	
E94,903	11.25	20	55	2	
E31,551	9.50	9	56	2	
E94,901	10.75	40	56	3	
E94,915	11.75	46	56	2	
E95,058	8.25	6	58	3	
E95,161	9.95	8	60	1	
E94,899	10.95	33	62	2	
E95,064	8.25	19	67	2	
E95,065	6.95	5	68	1	
E31,448	10.50	17	68	2	
E95,066	8.25	12	69	2	
E32,374	7.50	6	70	2	
E95,788	6.50	17	71	3	
E94,828	14.75	45	78	2	
E94,905	9.50	11	85	2	
E32,233	9.50	28	87	2	
E94,852	18.25	63	89	2	
E32,035	12.25	26	90	1	
E95,168	6.95	6	92	1	
E94,085	9.50	14	97	2	
E32,350	13.25	25	100	1	
E32,152	26.25	76	102	2	
E32,436	10.75	24	114	2	
E31,588	26.25	89	117	2	
E94,896	12.25	25	123	1	
E94,900	8.95	32	125	3	
E32,236	32.50	100	127	2	
E95,770	10.25	25	132	2	
E31,449	18.50	42	136	1	CTD
E32,151	26.50	76	140	2	
E94,897	14.00	25	141	1	
E95,099	7.50	12	150	2	
E32,172	11.50	34	153	2	
E94,916	16.25	48	153	2	
E31,450	25.25	55	153	2	
E31,548	25.25	76	159	2	
E32,345	32.50	95	166	1	CTD
E32,170	14.00	27	172	1	CTD
E32,149	31.25	101	178	2	
E32,232	23.50	114	191	2	PLA
E32,424	39.75	126	191	2	
E95,116	6.75	8	203	2	
E32,425	99.75	164	218	2	
E32,148	31.25	112	238	2	
E32,411	41.25	98	250	1	CTD
E94,917	15.25	54	254	2	
E95,122	7.25	9	265	1	
E94,739	12.95	42	267	2	
E94,745	8.95	38	308	3	
E94,744	12.50	38	333	2	
E32,375	12.95	48	347	3	
E94,742	11.75	38	364	2	
E31,451	14.75	28	444	1	CTD
E32,446	26.50	89	476	1	
E94,747	12.50	40	667	2	
E94,743	9.75	38	800	3	
E94,909	12.50	22	952	1	

Comments: CTD=Coated; **MTD**=Mounted; **BEV**=Beveled; **PLA**=Plastic; **ASP**=Aspheric; **HA**=Heat Absorbing



DOUBLE CONVEX LENSES (DCX)

Double-Convex (DCX) lenses are lenses which have two outward curving faces. Their faces may be symmetric or they may have one curve sharper than the other. Double-Convex Lenses have a positive focal length & will act as a magnifying or condensing lens.

COMMERCIAL DCX

Number	Price	Dia. (mm)	F.L. (mm)	Grade	Comments
E32,023	14.50	3	3	1	
E31,858	15.75	3	3	1	CTD
E32,022	14.50	3	4.5	1	
E31,859	15.75	3	4.5	1	CTD
E32,021	14.50	6	6	1	
E31,860	15.75	6	6	1	CTD
E32,024	16.50	6	8	1	
E94,861	16.50	10	8	1	CTD
E32,020	14.50	6	9	1	
E31,861	15.75	6	9	1	CTD
E32,018	15.75	9	9	1	
E32,019	17.25	9	9	1	CTD
E94,823	31.95	9	11	1	CTD
E94,860	26.50	11	12	1	
E32,014	15.75	12	12	1	
E32,015	17.25	12	12	1	CTD
E32,188	26.50	9	13	1	CTD
E32,016	15.75	9	13.5	1	
E32,017	17.25	9	13.5	1	CTD
E94,919	22.75	16	15	1	
E30,982	31.95	13	17	1	CTD
E32,047	26.50	16	17	1	
E31,839	21.25	8	18	1	CTD
E32,012	15.75	12	18	1	
E32,013	17.25	12	18	1	CTD
E31,845	26.50	13	19	1	
E94,867	26.50	13	20	1	
E94,858	29.25	15	20	1	
E94,824	31.95	16	21	1	
E32,187	25.25	11	22	1	CTD
E94,920	20.50	24	24	1	
E32,489	18.95	25	25	1	
E32,490	20.75	25	25	1	CTD
E32,207	26.25	15	27	1	CTD
E32,205	26.25	16	27	1	CTD
E32,243	20.50	29	28	1	
E30,983	26.50	22	29	1	CTD
E94,921	21.75	29	29	1	CTD
E94,822	21.75	25	36	1	CTD
E94,817	21.75	29	38	1	CTD
E32,161	20.50	21	39	1	
E32,438	21.25	27	39	1	
E32,281	20.50	21	41	1	
E94,859	15.95	18	43	1	CTD
E30,984	19.75	21	46	1	
E31,838	20.50	27	46	1	
E94,274	20.50	26	50	1	
E94,257	22.75	36	50	1	CTD
E32,189	16.50	17	52	1	
E94,370	22.75	33	55	1	CTD
E32,240	22.75	36	57	1	CTD
E94,866	12.75	6	65	1	
E94,375	19.95	33	65	1	
E32,451	18.95	19.5	69	1	CTD
E32,210	23.50	52	72	1	CTD
E32,347	49.75	60	72	1	
E32,355	33.25	55	79	1	CTD
E94,757	33.25	52	89	1	
E32,241	21.95	23	131	1	
E31,795	23.50	62	147	1	
E31,794	23.50	75	214	1	
E31,792	25.95	87	249	1	
E31,793	34.75	100	249	1	

EXPERIMENTAL DCX

Number	Price	Dia. (mm)	F.L. (mm)	Grade	Comments
E32.459	12.75	8.5	6	1	CTD
E32.,190	9.75	6	9	3	
E32,037	12.75	10	12	1	CTD
E32,439	13.25	11	12	1	
E31,840	12.50	8	13	2	CTD
E32,465	10.25	8	13	3	
E31,841	15.50	9	13	1	
E32,444	15.50	10	14	2	CTD
E32,351	12.75	17	14	3	
E32,466	10.25	8	15	3	
E94,754	12.95	11	15	1	
E32,178	13.75	16	15	2	CTD
E94,868	13.75	16	16	2	
E32,174	13.75	18	16	2	
E31,545	13.95	11	17	1	CTD
E31,844	4.95	17	17	2	PLA
E94,870	13.75	19	17	2	

EXPERIMENTAL DCX (cont'd.)

Number	Price	Dia. (mm)	F.L. (mm)	Grade	Comments
E95,203	6.95	5	18	2	
E95,201	8.25	8	18	2	
E95,338	6.95	8	18	3	
E95,202	6.95	10	18	3	
E94,848	10.50	10	18	2	CTD
E32,458	13.25	9	19	1	CTD
E94,750	8.75	10	19	2	
E32,445	14.75	11	20	1	CTD
E31,843	4.95	11	20	2	PLA
E95,761	6.95	7	21	2	
E95,218	6.95	6	23	2	
E95,727	7.50	8	23	2	
E94,787	12.50	19	23	1	
E94,854	10.75	14	25	2	
E94,871	11.50	23	25	2	
E94,799	12.25	19	27	1	
E31,842	5.25	10	28	2	PLA
E32,177	12.50	21	28	2	
E32,463	12.00	14	29	2	
E94,922	12.50	31	29	2	
E94,794	13.95	36	30	2	
E94,753	9.95	11	31	2	
E32,160	9.95	14	31	2	
E32,239	6.95	20	31	3	
E94,230	14.95	35	31	2	
E31,508	8.75	13	32	2	
E94,236	9.95	14	34	2	
E94,869	8.75	17	34	3	
E95,806	5.25	20	35	2	PLA
E94,873	13.95	28	36	2	CTD
E95,240	10.25	19	37	2	
E95,354	11.75	12	38	2	
E94,800	15.25	32	38	1	
E95,246	6.95	10	39	2	
E95,243	6.95	13	39	2	
E95,247	9.50	18	39	2	
E31,510	8.50	17	40	2	
E32,175	9.50	24	40	2	
E32,173	10.25	25	40	2	
E94,826	12.50	34	40	2	
E94,256	11.50	29	43	2	
E95,782	7.25	11	44	2	
E95,362	7.95	18	44	2	
E94,825	18.75	40	44	1	CTD
E94,884	16.95	43	44	2	
E94,363	16.95	46	44	2	
E95,261	12.50	19	45	2	
E95,262	12.50	25	45	2	
E95,268	6.95	21	47	3	
E94,880	13.95	39	47	2	
E95,270	7.95	14	48	2	
E95,783	9.50	22	48	2	
E32,440	12.50	33	48	2	
E94,925	19.50	66	49	2	
E32,437	9.95	19	50	2	
E95,286	9.75	24	50	2	
E32,176	9.75	27	50	2	
E95,714	6.95	22	51	3	
E94,875	13.95	38	51	2	
E94,762	15.50	42	53	2	
E95,772	7.75	30	55	3	
E94,369	12.25	33	55	2	CTD/MTD
E94,282	13.95	35	55	2	
E94,888	17.95	59	56	2	
E32,378	10.50	13	58	2	
E94,289	12.50	32	59	3	
E94,862	17.95	60	59	2	
E32,215	19.75	56	61	1	CTD
E95,795	9.75	25	62	2	
E95,773	9.75	30	63	2	
E32,282	11.25	23	64	2	
E95,780	6.95	27	64	3	
E95,298	7.50	40	64	3	
E94,855	11.25	23	65	2	
E95,301	11.00	33	65	2	
E94,918	6.95	13	66	2	
E94,874	13.95	37	66	2	CTD
E94,373	12.95	40	66	2	
E95,771	8.25	25	68	2	
E94,376	11.50	26	68	1	
E94,802	11.75	38	70	2	
E94,306	20.00	60	72	2	
E94,377	11.50	37	73	2	
E32,407	18.50	43.5	76	1	
E94,827	10.95	24	77	2	
E94,803	12.95	41	78	2	
E94,885	14.75	48	79	2	
E32,356	19.95	55	79	2	CTD
E95,671	6.95	7	80	3	
E95,807	9.75	5	81	2	
E94,380	9.50	32	82	3	
E95,796	6.95	35	82	3	
E32,244	16.25	52	83	2	
E94,801	13.75	37	85	1	CTD
E94,805	12.25	45	85	2	
E32,216	20.95	61	85	1	CTD
E94,779	10.50	40	88	3	
E94,318	16.25	54	89	2	
E32,180	10.75	30	94	3	
E32,036	12.25	19	95	1	CTD
E12,092	10.25	45	95	3	
E32,179	10.75	25	105	3	
E32,038	11.75	15	106	1	CTD
E94,878	10.25	39	109	3	
E94,872	10.50	25	119	3	
E94,804	12.50	42	120	2	
E32,238	27.95	91	120	2	TEMP
E94,923	14.25	52	122	2	
E95,784	6.95	24	128	3	
E32,426	47.75	127	141	2	
E31,541	41.75	114	147	2	
E32,462	22.75	64	149	1	CTD
E94,883	15.25	43	153	2	
F12,010	15.25	64	154	2	
E31,509	13.25	40	159	2	
E94,895	25.95	102	166	3	
E31,561	25.50	87	173	2	
E94,886	14.75	52	174	2	
E42,790	14.95	45	177	2	CTD
E94,889	15.00	49	191	2	
E31,542	43.75	114	191	2	
E31,547	43.75	113	201	2	
E94,882	11.00	40	220	3	
E94,849	25.95	82	226	3	
E94,892	64.75	125	318	2	
E94,924	15.95	52	320	2	
E94,876	10.75	24	546	1	

YOUR COMPLETE INDEX
IS ON PAGE 111

f/value of a LENS

The f/value of a lens is the ratio of clear aperture to focal length. It is assumed that the object is fairly distant--at least 30 times the focal length. For close objects, the image distance will exceed f.l. In such case, the effective f/value is based on the image distance.

$$\text{EFFECTIVE f/VALUE} = \frac{\text{IMAGE DISTANCE}}{\text{CLEAR APERTURE}}$$

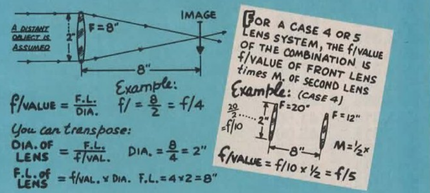


IMAGE
A DISTANT OBJECT IS ASSUMED
2"
F=8"
8"
F=20"
F=12"
8"
2"
M=½x

Example:

$f/VALUE = \frac{F.L.}{DIA.}$ $f/ = \frac{8}{2} = f/4$

You can transpose:

$DIA.\ OF\ LENS = \frac{F.L.}{f/VAL.}$ $DIA. = \frac{8}{4} = 2"$

$F.L.\ of\ LENS = f/VAL. \times DIA.$ $F.L. = 4 \times 2 = 8"$

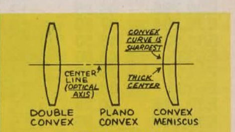
FOR A CASE 4 OR 5 LENS SYSTEM, THE f/VALUE OF THE COMBINATION IS f/VALUE OF FRONT LENS times M. OF SECOND LENS

Example: (CASE 4)

$\frac{20}{2} = f/10$

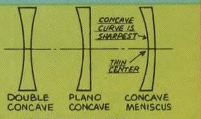
$f/VALUE = f/10 \times ½ = f/5$

A Lens Primer


CONVEX CURVE IS SHARPEST
CENTER LINE (OPTICAL AXIS)
THICK CENTER
DOUBLE CONVEX
PLANO CONVEX
CONVEX MENISCUS

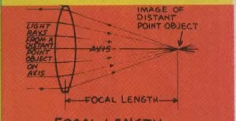
POSITIVE LENSES

A LENS IS POSITIVE IF IT CAN CONVERGE PARALLEL LIGHT TO FORM AN IMAGE. IF THE LENS IS A SINGLE PIECE OF GLASS, IT IS A SIMPLE LENS


CONCAVE CURVE IS SHARPEST
THIN CENTER
DOUBLE CONCAVE
PLANO CONCAVE
CONCAVE MENISCUS

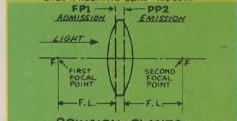
NEGATIVE LENSES

NEGATIVE LENSES CAUSE PARALLEL LIGHT RAYS TO DIVERGE – NO IMAGE IS FORMED. USED ALONE AT EYE. A NEGATIVE LENS REDUCES


LIGHT RAYS FROM A DISTANT POINT OBJECT ON AXIS
AXIS
IMAGE OF DISTANT POINT OBJECT
FOCAL LENGTH

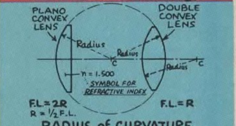
FOCAL LENGTH

DISTANCE FROM A LENS TO POINT WHERE IT FORMS AN IMAGE OF A DISTANT OBJECT. *USUALLY MEASURED FROM CENTER OF LENS ALTHO NOT EXACT*


FP1
ADMISSION
PP2
EMISSION
LIGHT
F
FIRST FOCAL POINT
SECOND FOCAL POINT
F
F.L.
F.L.

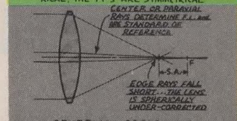
PRINCIPAL PLANES

IMAGINARY PLANES FROM WHICH EXACT FOCAL LENGTH MEASUREMENTS ARE TAKEN. IF THE LENS IS SYMMETRICAL, THE PP's ARE SYMMETRICAL


PLANO CONVEX LENS
DOUBLE CONVEX LENS
Radius
Radius
Radius
C
C
n = 1.500
SYMBOL FOR REFRACTIVE INDEX
F.L.=2R
R = ½F.L.
F.L.=R

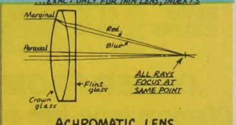
RADIUS of CURVATURE

ALL SIMPLE LENSES HAVE SPHERICAL CURVES. THE RADII DETERMINE THE FOCAL LENGTH. *FORMULAS ARE APPROX. ...EXACT ONLY FOR THIN LENS, INDEX 1.5*


CENTER OR PARAXIAL RAYS DETERMINE F.L. and ARE STANDARD OF REFERENCE
S.A.
F
EDGE RAYS FALL SHORT...THE LENS IS SPHERICALLY UNDER-CORRECTED

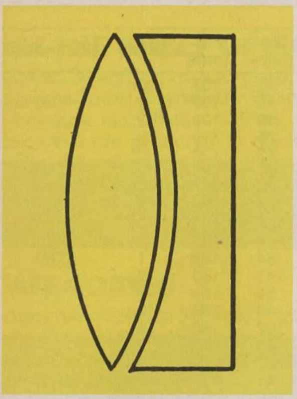
SPHERICAL ABERRATION

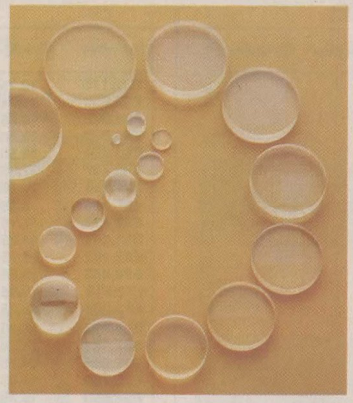
AS SHOWN, A POSITIVE LENS IS SPHERICALLY UNDER-CORRECTED. S.A. VARIES WITH f/VALUE OF LENS AND IS LESS FOR A SMALL APERTURE

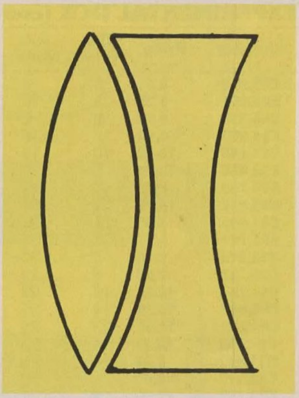

Marginal
Paraxial
Red
Blue
Flint glass
Crown glass
ALL RAYS FOCUS AT SAME POINT

ACHROMATIC LENS

ACHROMATS ARE TWO-ELEMENT LENSES CORRECTED FOR LONGITUDINAL COLOR AND SPHERICAL ABERRATION FOR AN AXIAL OBJECT







ACHROMATIC LENSES

Consists of two or more optical components, generally cemented together to form a doublet or triplet. The two components are of different optical densities and therefore tend to correct chromatic and image aberrations that can occur because of the diffraction effects of a single type and piece of glass.

COMMERCIAL ACHROMATS

Number	Price	Dia. (mm)	F.L. (mm)	Grade	Comments
E6390	37.50	7	12	1	CTD
E32,298	48.00	6.25	12.5	1	
E32,299	51.75	6.25	12.5	1	CTD
E32,300	45.75	6.25	15	1	
E32,301	49.25	6.25	15	1	CTD
E6391	39.25	4	16	1	
E6387	39.95	12	17	1	CTD
E6388	38.95	8	18	1	CTD
E32,208	39.95	10	18	1	CTD
E32,302	40.95	6.25	20	1	
E32,303	44.50	6.25	20	1	CTD
E32,308	49.95	12.5	20	1	
E32,309	53.50	12.5	20	1	CTD
E6389	39.95	10	22	1	CTD
E32,304	37.25	6.25	25	1	
E32,305	40.95	6.25	25	1	CTD
E6386	39.95	10	25	1	CTD
E32,310	46.25	12.5	25	1	
E32,311	49.95	12.5	25	1	CTD
E30,120	50.25	15	25	1	Triplet (Hastings)
E31,161	37.50	9	26	1	
E32,203	37.50	18	26	1	
E32,382	40.95	17	30	1	CTD
E32,312	43.95	12.5	30	1	
E32,313	47.50	12.5	30	1	CTD
E32,383	58.95	18	31	1	CTD
E32,306	38.50	6.25	35	1	
E32,307	42.00	6.25	35	1	CTD
E5206	40.25	16	35		CTD
E32,318	62.50	25	35	1	
E32,319	65.50	25	35	1	CTD
E32,209	39.95	14	36	1	CTD
E30,977	37.50	18	36	1	
E32,384	44.50	12	39	1	CTD
E32,385	44.50	11	40	1	CTD
E32,314	41.50	12.5	40	1	
E32,315	45.00	12.5	40	1	CTD
E32,320	57.75	25	40	1	
E32,321	61.25	25	40	1	CTD
E31,162	37.50	15	41	1	
E6393	39.95	10	42	1	CTD
E94,820	39.50	9	43	1	CTD
E30,229	50.25	23	43	1	Triplet
E30,765	40.25	13	45	1	CTD
E32,204	37.50	18	45	1	
E31,830	43.50	20	47	1	
E6335	45.50	28	47	1	CTD
E6218	39.95	13	49	1	CTD
E6394	38.25	10	50	1	CTD
E32,316	40.25	12.5	50	1	
E32,317	43.95	12.5	50	1	CTD
E31,444	46.50	23	50	1	CTD
E32,322	54.75	25	50	1	
E32,323	58.25	25	50	1	CTD
E32,495	54.75	30	50	1	
E32,496	58.25	30	50	1	CTD
E30,981	37.25	9	52	1	CTD
E94,818	38.95	22	55	1	CTD
E32,386	44.50	12	56	1	CTD
E32,159	37.95	14	56	1	CTD
E32,387	49.25	16	56	1	CTD
E32,423	54.75	25	57	1	CTD
E32,388	58.95	22	61	1	CTD
E6246	139.50	39	63	1	CTD
E30,978	47.95	13	65	1	CTD
E30,570	39.75	21	67	1	CTD
E30,490	39.95	23	68	1	CTD
E30,980	37.25	10	70	1	CTD
E32,324	52.25	25	75	1	
E32,325	55.95	25	75	1	CTD
E32,497	57.75	30	75	1	
E32,498	61.25	30	75	1	CTD
E42,792	76.95	46	78	1	CTD
E94,821	59.50	16	81	1	CTD
E40,616	61.95	36	85	1	CTD
E32,389	61.25	33	86	1	CTD
E6408	61.95	36	87	1	CTD
E30,988	19.95	24×32	90	1	CTD riflescope lens

ORDER FROM US DIRECT

Efstonsciene has only one location, and services all orders directly from our Toronto, Ontario premises.

COMMERCIAL ACHROMATS (Cont'd.)

Number	Price	Dia. (mm)	F.L. (mm)	Grade	Comments
E94,819	49.95	25	90	1	CTD
E6279	31.25	16	92	1	
E32,211	96.00	50	96	1	CTD
E32,326	47.50	25	100	1	
E32,327	51.00	25	100	1	CTD
E32,499	54.75	30	100	1	
E32,500	58.25	30	100	1	CTD
E30,483	58.95	33	100	1	CTD
E40,614	56.75	36	100	1	
E32,390	63.75	38	107	1	CTD
E30,569	58.95	30	109	1	
E32,391	63.75	35	118	1	CTD
E30,987	21.00	29×37	120	1	CTD riflescope lens
E30,979	54.75	22	122	1	CTD
E30,996	52.50	31	122	1	
E32,491	47.50	25	125	1	
E32,492	51.00	25	125	1	CTD
E32,392	58.95	26	126	1	CTD
E40.615	57.00	40	126	1	
E32,393	61.25	34	129	1	CTD
E5175	57.00	32	132	1	
E32,394	61.25	32	137	1	CTD
E32,395	66.00	42	149	1	CTD
E32,493	47.50	25	150	1	
E32,494	51.00	25	150	1	CTD
E32,501	54.75	30	150	1	
E32,502	58.25	30	150	1	CTD
E5222	61.95	37	150	1	CTD
E30,803	57.25	29	162.5	1	CTD
E32,396	63.75	38	164	1	CTD
E32,397	66.00	43	164	1	CTD
E41,049	57.00	45	172	1	
E5216	112.50	52	193	1	CTD
E32,398	66.00	41	202	1	CTD
E6329	26.50	25	279	1	Field Lens
E16.014	718.50	127	304.8	1	MTD,CTD Triplet
E31,401	252.50	63	356	1	MTD,CTD
E31,402	199.50	63	356	1	CTD
E42,818	252.50	63	487	1	MTD,CTD
E42,817	199.50	63	487	1	CTD
E32,399	61.25	33	519	1	CTD
E32,400	58.95	27	606	1	CTD
E31,263	645.50	127	635	1	CTD
E30,976	399.50	76	841	1	CTD Airspcd
E50,107	694.50	102	1529	1	CTD Airspcd
E70.163	1058.50	127	1905	1	CTD Airspcd

EXPERIMENTAL - ACHROMATS

Number	Price	Dia. (mm)	F.L. (mm)	Grade	Comments
E30,989	26.25	7	16	1	CTD
E32,456	30.00	13	16	1	CTD
E32,267	25.75	10	18	2	
E32,268	19.95	10	18	3	
E32,452	30.00	11.5	20	1	CTD
E5131	29.75	17	23	2	CTD
E30,750	23.25	5	24	1	
E32,413	44.75	16	25	1	Triplet (Hastings)
E32,046	20.50	11	28	2	CTD Air MTD
E32,264	22.50	14	28	1	CTD
E30,496	27.00	11	29	2	CTD
E32,447	41.75	18	29	1	CTD
E5148	27.00	18	29	2	
E30,946	17.25	10	34	1	
E30,764	26.50	12	38	1	CTD
E6380	25.25	13	37	2	CTD
E30,565	25.25	13	38	2	CTD
E32,167	19.95	15	38	3	CTD
E6191	36.75	18	38	2	
E30,995	19.95	26	40	3	CTD
E31,157	23.00	16	43	1	MTD,CTD
E40,807	27.25	20	44	1	MTD
E30,948	20.95	7	45	1	MTD,CTD
E40,172	19.75	18	50	3	MTD Airspaced
E30,562	27.00	10	55	2	CTD
E42,300	33.25	13	55	2	CTD
E6292	28.50	22	55	1	MTD

EXPERIMENTAL - ACHROMATS (Cont'd.)

Number	Price	Dia. (mm)	F.L. (mm)	Grade	Comments
E32,157	31.75	30	55	1	CTD
E30,571	28.75	16	57	2	CTD
E31,768	28.75	14	59	2	CTD
E30,992	26.25	7	60	1	CTD
E31,158	21.25	35	63	3	CTD
E31,832	28.75	18	64	2	CTD
E30,778	27.50	40	64	2	Eye lens
E31,443	30.00	23	75	1	CTD
E6017	20.25	12	80	2	
E6210	27.25	12	80	2	CTD
E32,262	27.25	36	85	3	
E6308	25.95	33	90	2	
E6187	23.25	25	95	2	
E6227	25.95	25	95	2	Eye lens-CTD
E31,160	28.95	40	95	2	CTD
E6302	13.25	15	98	3	
E32,338	23.75	33	100	3	
E32,261	24.50	36	100	3	
E6357	23.75	34	103	3	
E32,246	30.00	26	106	1	
E40,619	31.25	35	119	2	
E6233	28.75	25	122	2	CTD
E6409	27.00	16	124	2	CTD
E6410	23.75	16	124	2	MTD
E30,482	28.75	26	126	2	
E40,899	33.95	40	126	2	
E32,156	22.75	32	129	3	CTD
E30,945	36.50	66	129	2	CTD
E6176	24.75	38	130	3	
E6285	24.00	38	130	3	MTD
E32,158	27.75	32	152	3	CTD
E6353	29.75	33	172	2	
E6183	37.25	45	191	2	CTD
E40,970	32.75	45	191	2	MTD
E31,831	36.50	37	195	2	CTD
E30,998	44.75	64	211	2	
E41,266	88.25	52	220	2	
E30,991	31.25	21	226	2	
E30.534	30.25	36	336	2	CTD

NEGATIVE ACHROMATS COMMERCIAL

Number	Price	Dia. (mm)	F.L. (mm)	Grade	Comments
E32,234	70.95	26	−44	1	CTD
E30,448	33.50	18	−46	1	CTD
E42,782	60.00	26.4	−109	1	CTD
E32,401	58.95	27	−908	1	CTD

EXPERIMENTAL

Number	Price	Dia. (mm)	F.L. (mm)	Grade	Comments
E30,950	13.25	14	−9	1	CTD
E30,949	14.50	11	−26	1	
E30,990	15.95	20	−28	2	CTD
E42,791	15.95	17	−34	2	CTD
E32,034	13.25	13	−403	1	CTD
E31,163	17.95	44	−456	2	

ATTN: OEM ACCOUNTS/ SPECIAL OPTICS, RFQ

Edmund Scientific is recognized as a major producer of mirrors and parabolic surfaces. Besides this large quantities of spherical and plano work on a variety of shapes and substrates are fabricated for stock and special requirements. Optical glass, fused silica, zerodur and other materials are utilized to produce lenses, flats, mirrors and more. Let us assist you with your optical requirements. Contact our Industrial Sales Department or send your specifications and drawings for quotation.

Meniscus Lenses (MNS)

Meniscus (MNS) lenses are convex-concave lenses. They have one outward curving face and one inward curving face. If the outward curve is sharper than the inward curve, the MNS lens has a positive focal length and acts as a magnifying lens. If the inward curve is sharper, the lens has a negative focal length and acts as a reducing lens.

Meniscus lenses make excellent supplementary or accessory lenses for display & camera systems, enlargers & other optical systems. They are also convenient in the rapid assembly of prototype optical systems.

Positive Meniscus Lenses are lenses that magnify. The shorter the focal length, the greater magnification.

Commercial Grade

Number	Price	Dia.	F.L.	Grade	Comments
E32,339	$13.75	9	45	1	CTD
E94,863	13.75	14	81	1	CTD
E30,985	13.75	10	125	1	CTD
E94,649	20.75	41	166	1	CTD
E94,734	18.75	51	166	1	
E94,648	17.25	41	250	1	
E94,641	14.75	30	333	1	
E94,647	17.25	41	333	1	
E94,732	19.95	51	333	1	
E94,646	17.25	41	500	1	
E94,731	19.95	51	500	1	
E94,645	17.25	41	1000	1	
E94,730	19.95	51	1000	1	

Experimental Grade

Number	Price	Dia.	F.L.	Grade	Comments
E95,703	9.25	15	23	1	CTD
E95,760	8.00	11	29	2	CTD
E32,033	17.00	15	40	1	CTD
E95,801	6.50	10	50	3	
E95,802	6.50	10	67	3	
E32,163	6.95	18	67	2	
E95,521	6.95	18	85	2	
E95,557	9.25	18	91	2	
E95,526	6.50	15	101	3	
E95,523	6.95	21	101	2	
E31,549	19.50	76	103	2	
E32,231	14.50	60	104	2	
E94,528	6.50	35	105	3	
E94,930	9.25	49	117	2	
E95,535	8.00	33	120	2	
E95,722	6.50	19	122	2	
E31,544	13.75	26	123	2	
E31,507	9.25	27	123	2	
E32,142	8.50	40	253	1	CTD
E32,212	8.50	40	257	1	CTD
E32,449	21.00	87	260	1	CTD
E94,840	19.95	74	287	2	
E32,183	14.50	49	315	2	CTD
E32,427	21.95	89	476	1	
E42,936	17.50	85 x 85	667	2	

Negative Meniscus Lenses are lenses that reduce. The shorter the focal length, the greater the reduction.

Experimental Grade

Number	Price	Dia.	F.L.	Grade	Comments
E32,461	8.75	8.5	-16	1	CTD
E95,564	8.25	9	-17	2	
E95,605	6.50	11	-20	3	CTD
E94,607	6.50	13	-31	3	
E95,609	8.95	16	-33	2	CTD
E32,184	7.50	9	-34	1	CTD
E95,570	6.50	24	-39	3	
E95,576	6.50	21	-66	3	
E32,380	8.75	23	-69	1	CTD
E95,612	8.75	15	-72	1	
E94,613	6.50	24	-74	3	CTD
E95,583	6.50	18	-89	2	
E95,586	9.00	40	-95	2	
E95,591	8.25	37	-125	2	
E32,412	14.50	78	-165	1	CTD
E94,598	6.50	55	-169	3	
E94,624	10.75	52	-238	2	
E94,813	6.50	38	-257	3	
E94,601	6.50	51	-264	3	

Magnifier Lenses (DCX) Rectangular

Number	Price	Size mm	F.L.	Grade
E94,881	14.25	27x40	60	1
E12,051	11.75	51x51	64	2
E12,029	11.95	51x51	127	1
E12,033	9.25	38x89	182	3
E42,649	12.00	50x99	222	2

Cylinder Lenses (CYL)

Number	Price	Type	Size mm	F.L. mm
E12,050	7.75	DCX	3x9	1.4
E40,212	31.00	PCX	24x169	44
E30,240	37.25	PCX	65x220	91
E50,157	53.00	PCX	65x440	91

Comments: CTD = Coated; **MTD** = Mounted; **BEV** = Bevelled Edge; **PLA** = Plastic; **ASP** = Aspheric; **HA** = Heat Absorbing;

Plano Convex - Technical Spec Lenses

Technical Spec Lenses are industrial lenses with an anti-reflective, magfluoride coating. Blueprints are available from Edmund Scientific for all lenses. All lenses are centered. Commercial Grade.

Dia.	Effective Focal Length	Back F.L.	Center Thickness	Glass Type	Uncoated Number	Uncoated Price	Coated Number	Coated Price
9.0	13.5	11.947	2.60	SF5	E32,009	$11.50	E32,010	$12.75
9.0	18.0	16.411	2.41	BK7	E32,008	11.50	E31,854	12.75
12.0	18.0	16.207	3.00	SF5	E32,006	11.50	E32,007	12.75
12.0	24.0	22.154	2.80	BK7	E32,011	11.50	E31,855	12.75
15.0	22.5	20.499	3.35	SF5	E32,004	12.75	E32,005	13.95
15.0	30.0	27.904	3.18	BK7	E32,003	12.75	E31,856	13.95
18.0	27.0	24.729	3.80	SF5	E32,001	12.75	E32,002	13.95
18.0	36.0	33.647	3.57	BK7	E32,000	12.75	E31,857	13.95

Double Convex - Technical Spec Lenses

Tolerances

Diameter: ±.02

Effective F.L.: 2%

Center Thickness: ±.04

Back F.L.: 2%

Dia.	Effective Focal Length	Back F.L.	Center Thickness	Glass Type	Uncoated Number	Uncoated Price	Coated Number	Coated Price
3.0	3.0	2.208	2.30	SF5	E32,023	$11.50	E31,858	$12.75
3.0	4.5	3.784	2.00	BK7	E32,022	11.50	E31,859	12.75
6.0	6.0	5.187	2.54	SF5	E32,021	11.50	E31,860	12.75
6.0	9.0	8.225	2.25	BK7	E32,020	11.50	E31,861	12.75
9.0	9.0	7.902	3.45	SF5	E32,018	12.75	E32,019	13.95
9.0	13.5	12.561	2.75	BK7	E32,016	12.75	E32,017	13.95
12.0	12.0	10.787	3.85	SF5	E32,014	12.75	E32,015	13.95
12.0	18.0	16.814	3.48	BK7	E32,012	12.75	E32,013	13.95

Plano-Concave (PCV) lenses have one flat & one inward curving face. It has a negative F.L. & acts as a reduceing or dispersing lens.

Commercial PCV

Number	Price	Dia.	F.L	Grade	Comments
E30,956	17.25	8	-8	1	CTD
E30,957	17.25	14	-9	1	CTD
E94,844	17.25	10	-11	1	CTD
E94,838	17.25	8	-12	1	CTD
E32,206	19.25	14	-18	1	CTD
E31,835	12.75	13	-29	1	CTD
E95,458	13.75	19	-29	1	
E94,496	17.25	33	-38	1	CTD
E32,218	17.25	23	-47	1	CTD

Experimental PCV

E94,926	11.50	3	-7	1	
E94,835	10.95	15	-13	2	
E31,504	9.50	13	-15	2	
E95,389	7.50	5	-20	2	
E95,391	7.50	13	-23	2	
E94,843	11.50	17	-23	1	CTD
E94,718	10.75	20	-24	2	
E95,396	6.75	18	-30	2	
E94,856	10.75	31	-33	2	
E32,164	11.95	31	-33	2	CTD
E95,430	9.25	16	-34	2	CTD
E95,400	7.50	17	-36	2	
E94,834	13.25	40	-40	2	
E95,402	7.50	14	-46	2	
E94,816	10.95	35	-53	2	
E95,805	7.50	5	-61	2	
E94,437	10.95	33	-73	2	
E95,411	7.50	16	-74	2	
E32,372	6.95	14x22	-76	2	
E94,815	10.95	42	-84	3	
E95,416	7.50	22	-85	2	
E31,574	14.50	52	-91	2	
E95,420	7.50	17	-100	2	
E32,169	9.25	24	-109	2	
E95,418	7.50	13	-116	2	
E94,836	10.95	45	-130	2	
E95,425	7.50	12	-148	2	
E32,266	10.95	27	-211	2	
E94,927	8.95	51	-246	2	

Double-Concave (DCV) lenses have two inward curving surfaces. Negative F.L. & acts as reducing or dispersal lens.

E32,460	12.75	2	-5	1	CTD
E32,182	14.50	9	-9	1	
E31,543	10.50	11	-10	2	
E32,181		13	-12	1	
E32,457	13.25	13	-12	1	CTD
E32,165	10.50	10	-13	2	CTD
E95,442	9.75	12	-13	2	
E32,453	9.95	11.5	-14	1	CTD
E31,503	10.75	13	-17	2	
E32,464	10.75	11	-19	3	
E32,168	10.75	11	-20	2	CTD
E31,550	6.95	15	-21	2	
E32,166	10.501	7	-25	3	CTD
E31,836	9.75	16	-27	2	CTD
E95,453	9.75	23	-27	2	
E95,798	7.75	26	-31	3	
E95,797	10.25	13	-32	1	
E32,381	10.25	11	-33	1	
E95,497	10.25	17	-34	1	
E95,461	7.75	20	-35	2	CTD
E94,498	8.25	22	-37	2	
E95,799	8.75	26	-37	2	CTD
E32,040	10.25	17	-38	1	CTD
E94,463	9.75	33	-38	2	
E30,958	12.00	37	-41	2	CTD
E95,500	7.75	11	-43	2	
E31,837	7.75	20	-46	3	PLAS
E32,352	8.75	23	-48	1	
E95,472	8.25	25	-48	2	
E94,501	7.75	25	-48	3	
E95,474	8.00	12	-50	1	
E32,213	20.25	55	-52	1	CTD
E32,144	17.25	48	-61	1	CTD
E32,140	15.95	40	-65	1	
E32,214	20.25	52	-65	1	CTD
E95,800	7.75	33	-67	3	
E95,483	7.75	12	-68	2	
E95,485	7.75	19	-70	2	
E32,039	10.25	26	-73	1	
E94,929	13.95	53	-78	2	
E94,507	7.75	19	-79	2	
E94,846	22.50	77	-87	3	
E94,847	25.75	72	-95	2	
E94,839	13.95	29	-144	1	

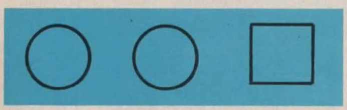
EDMUND'S FAMOUS LENS KITS

Lens kits with individually marked items showing size, lens type and focal length. All lenses are seconds due to slight chips.

10 Lens Kit. You can easily make a 4.4X Galilean telescope, 12.4X astro telescope, 3X double lens magnifiers, 5X and 14X pocket magnifiers; 40X microscope; 35mm slide viewer and other useful instruments. 14 page booklet.
F10,002 $23.50

35 Lens Kit. Larger, more versatile kit all marked with individual specifications. Greater variety allows more advanced experimentation. Make all instruments in Kit No. 2 plus many more of your choice. 14 page booklet.
F10,005 $49.50

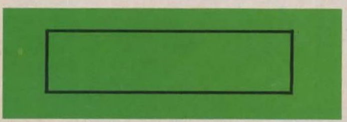
60 Lens Kit. Extra large assortment identified by type, f.l., and dia. Recommended for classroom, optical lab, and advanced amateurs. Includes 32 page "Fun With Optics" booklet.
F10,010 $79.50
Fun With Optics Book Only
F9050 $12.50



HEAT ABSORBING GLASS

Use between bulb and condenser lens to protect optics and slides from excessive heat.

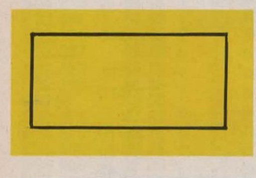
Number	Price	Size/mm	Thick/mm
E31,575	10.95	33 Dia.	16
E31,165	12.95	44 Dia.	4.3
E32,263	13.75	47 Dia.	6.4
E30,792	14.75	51 Dia.	6.4
E4010	15.95	51×51	6.4
E42,784	14.50	55 Dia.	4.0
E4063	16.95	59 Dia.	4.0
E42,783	18.95	76 Dia.	6.4
E4009	24.00	102×127	6.4
E31,500	16.75	63 Dia.	4.0



RECTANGULAR GROUND GLASS

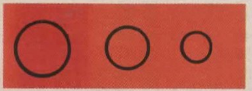
Glass finely ground on one side to give good light diffusion. Ideal rear projection screens.

Number	Price	Size/mm	Thick/mm
E32,357	5.50	18 Dia.	1.3
E30,493	7.25	26×43	5
E30,456	8.50	35×51	1.6
E30,759	9.50	51×51	1.6
E2143	9.50	57×82	1.6
E2144	10.25	82×108	1.6
E42,785	10.95	88×111	1.6
E32,467	11.95	89×127	3.4
E2148	11.95	102×127	1.6
E2146	12.75	127×178	1.6
E60,120	15.95	178×178	1.6
E2147	22.00	203×254	1.6



OPTICAL DIFFUSING GLASS

Similar to ground glass, but one surface is flashed with a milky white "opal" covering to diffuse light evenly. 4" x 5" x ⅛".
Diffusing Glass E2149 $13.25



MIRROR BLANKS OF PYREX

Mirror Blanks fo Pyrex® Brand #7740				Plate Glass Grinding Tools		
Dia.	Number	Thick	Price	Number	Thick	Price
3"	E31,404	⅜"	$ 27.75			
4¼"	E80,016	¾"	40.25	E80,011	⅝"	$ 21.95
6"	E80,017	1"	70.50	E80,012	⅝"	31.50
8"	E80,009	1⅜"	110.50	E80,013	¾"	45.50
10"	E80,000	1¾"	271.50			
12½"	E80,010	2⅛"	485.50			

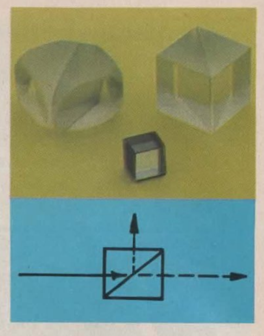
BEAM SPLITTERS PRISM TYPE

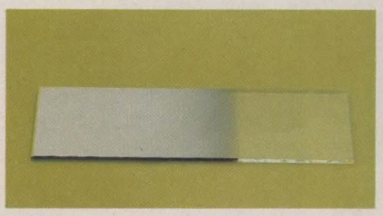
Commercial
BK-7 material 40R/40T

Number	Size		Price
E32,505	15 mm × 15 mm	CTD	$ 177.50
E32,506	20 mm × 20 mm	CTD	280.50
E32,503	25 mm × 25 mm	CTD	108.50
E32,504	40 mm × 40 mm	CTD	142.50

EXPERIMENTAL
35R/35T (APPROX.)

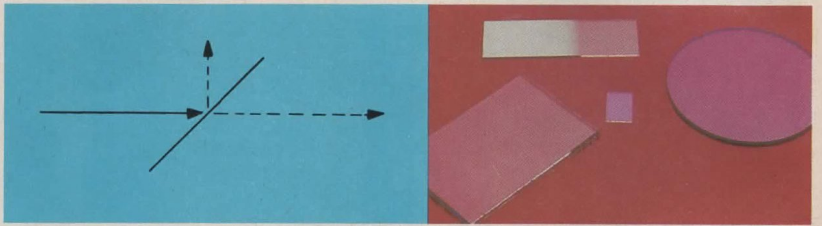
Number	Size	Price
E42,819	11 mm-coated (10% R; 90% T)	$ $60.25
E32,329	15mm	68.75
E30,769	22mm	105.50
E40,887	20 × 29mm	72.50
E40,996	25mm	145.50
E41,211	40mm	152.50
E60,273	49 × 53mm	144.50
E31,818	35 × 37mm	108.50





VARIABLE DENSITY BEAM SPLITTER

Three inch inconel coated. Density varies linearly with length from .02 (96% trans.) to 2.0 (1% trans.) Used to adjust spectrophotometers, monochromators and lasers.
Variable Density Beam Splitter **E41,960 $107.50**



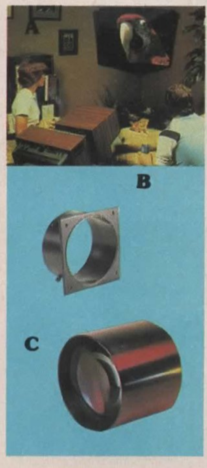
MIRROR TYPE BEAM SPLITTERS

Mirror type beam splitters have very neutral color characteristics. Interference coatings are extra durable. Glass is parallel to 20 seconds. Surface flat to approximately 10 wavelengths.

Number	Size (mm)	Reflectivity	Transmission	Price
E31,416	12×19×1	10	90	$18.50
E31,415	15 Dia. ×2	10	90	16.75
E31,414	18×30×2	50	50	19.95
E32,269	20×27×1	50	50	19.95
E31,413	20×37×1	50	50	21.50
E30,725	22×30×2	30	70	19.95
E31,412	25×28×1	30	70	23.00
E32,363	25×38×1.5	45	45	22.75
E31,437	25×38×3	25	75	24.00
E31.436	25×38×3	50	50	24.00
E31,435	25×38×3	75	25	24.00
E31,411	25×76×2	50	50	20.00
E31,434	51×76×3	25	75	38.50
E31,433	51×76×3	50	50	38.50
E31,432	51×76×3	75	25	38.50
E578	67×83×5	30	30	43.50
E32,222	69×115×3	80	20	47.75
E31,410	77 Dia. ×2	20	80	24.25
E61,097	127×178×3	30	70	52.75

THE WEDGE PRISM

A versatile beam splitter prism, prevents "ghost" image with laser systems. Can be a beam steerer in optical systems; a Herschel Wedge with telescope systems. Critical angle 10°; deflects beam five degrees. 40mm x 55mm.
Wedge Prism **E30,265 $49.50**



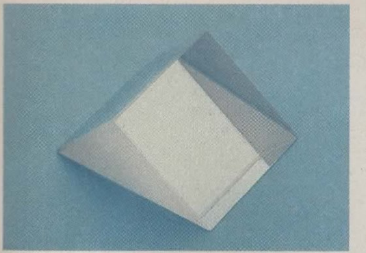
PROJECTION TV LENS, MOUNT AND KIT. BUILD YOUR OWN CUSTOM TV PROJECTION SYSTEM

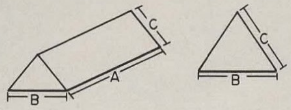
(A) Our television projection kit includes the materials you'll need to have your own entertainment center at a fraction of the cost of other projection units. You supply the 12" to 15" color or black and white set. We supply an attractive wood 26"×20"×18" cabinet; a 12" f/2.4 super TV projection lens with a 5" aperture and a 12" focal length; and a washable 45" diagonal aluminum-finished screen with protective edge banding for greater durability. Also includes wall brackets, a precision lens mount for easy focusing and instructions.
TV Projection Kit E16,029 **$1458.00**

(B) Precision Lens Focusing Mount. Provides smooth, mechanical focusing for varying lens to screen distances. Eliminates the need to make a rough focusing mount out of plywood. Precision machined for exact fit. Holds the lens at perfect focus. Attaches directly to your cabinet using four screws. E72,399 **$168.50**

(C) 12" f.l., f/2.4 Super Projection Lens. Build your own custom set using this lens as the heart of the system. 5" aperture; 2.4 f/ratio; mounted air-spaced triplet of high index glass. All surfaces anti-reflective (MgFl), hard-coated for maximum picture contrast, light transmision and durability. E16,014 **$695.00**

YOUR COMPLETE INDEX
IS ON PAGE 111





RIGHT ANGLE COMMERCIAL GRADE PRISMS

Right angle prisms are generally used to achieve a 90° light path bend. Images viewed through a single right angle prism will be erect but reversed left to right. Two right angle prisms can be used together as image erection or periscope systems. The simplified diagram illustrates our specification system for right angle prisms. All dimensions shown are in mm. Unless otherwise specified, the right angle prisms listed below are not aluminized.

The prisms listed below are commercial grade optical components and will be continuously available, subject only to price changes. Users requiring assured continuity of supply may be well advised to pay the higher prices for commercial grade prisms rather than risk exhausted inventories of surplus ones.

COMMERCIAL GRADE

Number	Price	B	C	A	Comments
E32,328	$36.25	7	5	5	
E32,329	38.75	7	5	5	Aluminized
E31,512	21.95	8	6	6	
E32,283	24.75	8	6	6	Aluminized
E30,575	24.75	10	7	7	
E32,284	28.25	10	7	7	Aluminized
E32,253	28.25	11	8	8	
E32,285	31.00	11	8	8	Aluminized
E32,330	33.75	14	10	10	
E32,331	36.25	14	10	10	Aluminized
E30,576	31.00	18	13	13	
E32,286	34.50	18	13	13	Aluminized
E3301	41.50	21	15	15	
E3309	44.00	21	15	15	Aluminized
E30,577	41.50	25	19	19	
E32,267	44.50	25	19	19	Aluminized
E32,334	48.75	28	20	20	
E32,335	51.95	28	20	20	Aluminized
E31,056	41.50	30	22	22	
E32,288	45.00	30	22	22	Aluminized
E32,336	54.25	35	25	25	
E32,337	58.25	35	25	25	Aluminized
E40,995	58.50	36	25	25	
E32,289	62.50	36	25	25	Aluminized
E31,054	39.25	40	29	20	
E32,290	46.00	40	29	20	Aluminized
E30,632	69.50	40	29	29	
E32,291	76.00	40	29	29	Aluminized
E41,002	84.75	43	31	31	
E32,292	92.50	43	31	31	Aluminized
E41,003	133.50	53	38	38	
E32,293	146.50	53	38	38	Aluminized
E3299	126.50	67	48	48	*
E32,294	146.50	67	48	48	*Aluminized
E41,004	248.50	71	51	51	
E32,295	270.50	71	51	51	Aluminized
E60,649	363.50	89	63	63	
E32,296	387.50	89	63	63	Aluminized
E60,650	498.50	108	76	76	
E32,297	532.50	108	76	76	Aluminized

*¼ wave, 20 arc second resolution

EXPERIMENTAL GRADE

E3072	16.25	30	19	13	Min. Porro
E40,865	27.25	43	29	20	Round Corners
E5211	29.75	43	26	21	Ctd. 6 x 30 Porro
E31,800	18.25	35	25	50	
E5114	36.75	51	35	25	Ctd. 7 x 50 Porro
E40,866	19.00	53	35	25	Round Corners
E801	73.50	54	38	146	Tank Prism
E31,293	25.75	54	38	28	Firsts
E808	18.25	54	38	28	Seconds
E32,193	25.75	54	38	28	Aluminized Firsts
E3274	18.25	54	38	28	Aluminized 2nd
E31,146	41.95	54	38	146	MTD, AL.
E31,294	28.25	54	38	38	Firsts
E809	21.75	54	38	28	Seconds
E32,194	28.25	54	38	38	Aluminized Firsts
E3275	21.75	54	38	38	Aluminized 2nd
E3169	33.50	57	40	41	Light Flint
E3219	20.50	60	39	22	Porro
E41,711	29.50	63	42	31	7 x 50 Porro
E810	38.00	69	49	54	
E807	61.00	69	49	167	Ctd., Mtd., Aluminized
E42,305	49.75	70	47	34	Porro
E806	85.50	69	49	167	Aluminized
E60,233	129.50	90	63	93	¼ Wave, Aluminized
E71,858	347.50	124	89	89	Aluminized

EQUILATERAL PRISMS—60°

Commercial Grade

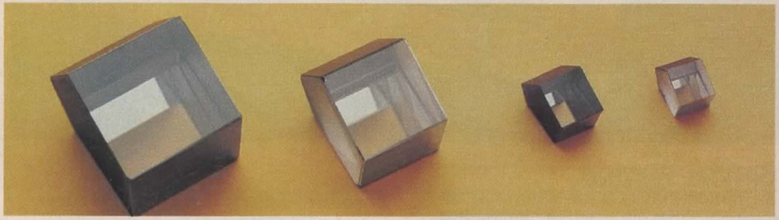
		Face Size	Length
E30,762	22.50	25mm	25mm
E30,294	52.50	25mm	50mm
E30,295	88.00	25mm	75mm
E30,296	131.50	25mm	100mm
E30,297	218.50	25mm	150mm
E31,053	88.00	32mm	28mm

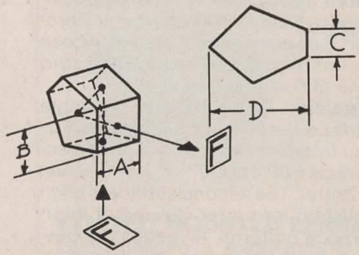
School Grade

Number	Price	Face Size	Length
C31,801	$ 12.80	25mm	50mm
C31,797	13.95	25mm	75mm
E31,798	17.50	25mm	100mm
E31,799	24.50	25mm	150mm

Better Grade Equilateral

Polished surfaces flat to ½ wave. Angles accurate to 5 min. of arc. Polished surfaces dimension 1″ × 1³⁄₁₆″. Made from dense flint glass free of refraction striae & strain. Index of refraction 1.648. **F30,143 $59.50**

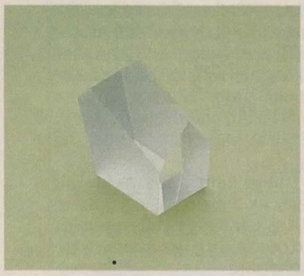




PENTA PRISMS

These five-sided prisms reflect light through a 90° angle by two reflections. Does not invert or revert images. The reflecting surfaces are aluminized. Slight movement of prism will not affect the true angle of reflection. Size in mm.

Number	Price	A	B	C	D
E30,355	51.95	8	8	4	13.8
E31,051	118.50	19	19	10	33.6
E42,779	139.50	25	25	14	43.9
E32,029	91.25	16	16	10	26.9
E32,030	54.50	10	10	5	18



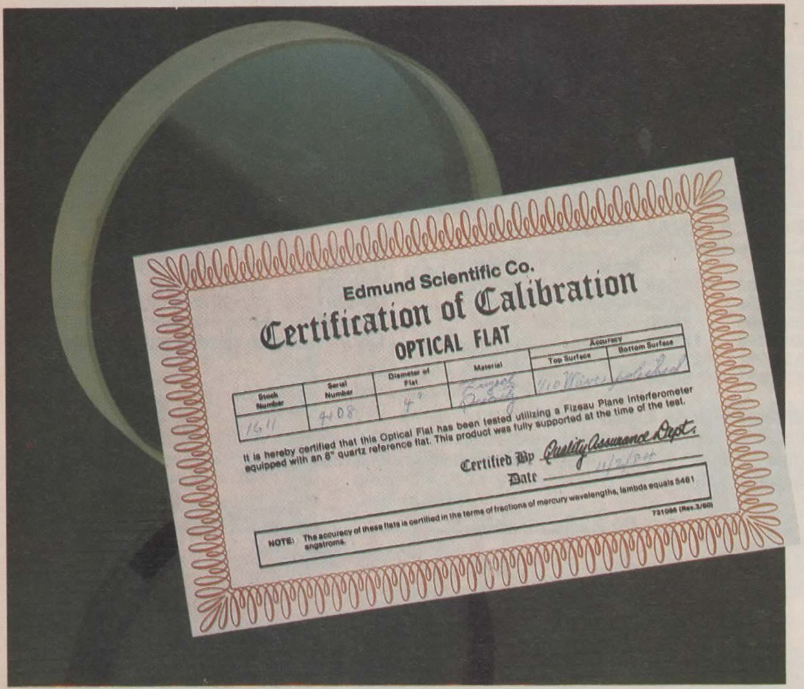
EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4

HERE'S A WIDE VARIETY OF SPECIAL PRISMS

The specialized prisms perform a variety of unusual tasks. Primarily intended for instrument use, they are excellent for design, prototype and related applications.

Type	Number	Price	Size (mm)	Comments
Amici-Roof	E3106	66.50	14 x 16 x 15	Rt. Angle plus Image Erection
Amici-Roof	E32,260	110.50	14 x 16 x 15	Rt. Angle Image Erection, 6 Arc. Sec. Res.
Amici-Roof	E3002	69.75	22 x 41 x 21	Rt. Angle plus Image Erection
Amici-Roof	E32,259	110.50	22 x 41 x 21	Rt. Angle Image Erection, 6 Arc. Sec. Res.
Cluster	E3070	38.75	Multi-Faceted	Barr & Stroud Prism from Range Finder
Cube	E3305	11.95	6.7 x 6.7 x 6.7	Polished (4) Sides
Amici-Roof	E31,577	26.25	22 x 38 x 22	Rt. Angle plus Image Erection
Sextant	E31,576	26.95	28 x 9 x 24	
Octagon	E3288	11.95	5.5 x 7.9 x 13.5	For 8mm Editor
Penta-Roof	E3210	17.25	24 x 28 x 9	75 Roof
Penta-Roof	E42,776	170.50	39 x 45 x 36	
Porro-Abe	E3006	13.75	9 x 12	Miniature Erector
Porro System	E30,279	30.95	21mm Sq. Face	Erecting System
Reflecting	E42,574	19.75	37 x 103	Aluminized
Dove	E31,055	112.50	76 x 25 x 18	
Special	E32,245	72.25	Multi-Faceted	Frankford Arsenal Prism #5

ORDER FROM US DIRECT
Efstonsciene has only one location, and services all orders directly from our Toronto, Ontario premises.



Edmund Scientific Co.

Certification of Calibration

OPTICAL FLAT

Stock Number	Serial Number	Diameter of Flat	Material	Accuracy Top Surface	Accuracy Bottom Surface
1611	4408	4"	Fused Quartz	1/10 Wave	polished

It is hereby certified that this Optical Flat has been tested utilizing a Fizeau Plane Interferometer equipped with an 8" quartz reference flat. This product was fully supported at the time of the test.

Certified By Quality Assurance Dept.

Date 11/2/84

731096 (Rev.3/80)

NOTE: The accuracy of these flats is certified in the terms of fractions of mercury wavelengths, lambda equals 5461 angstroms.

OPTICAL TESTING

An optical flat is a precision flat reflecting surface against which the flatness of another surface may be compared.

What An Optical Flat Shows. When an optical flat is placed on a surface to be tested (under monochromatic light), dark and bright lines appear. These are called "interference bands" and are contour maps of the work surface. The amount the bands curve, with reference to distance between them, indicates the amount of flatness error. Straight, parallel, and evenly spaced bands mean the work surface is accurately flat.

Applications. Optical flats are versatile devices for measuring surface flatness of polished areas by determining variations between work surfaces and surface of the optical flat; inspecting gage blocks for wear and accuracy; and testing prisms, filters, optical windows, etc.

Fizeau Interferometer. Our Fizeau Interferometer was built by the late Dr. David Rank for Edmund Scientific to inspect for flatness error in optical flats.

Available In Both Quartz & Zerodur®.

Quartz–We use clear optical fused quartz which has a very low thermal expansion (much lower than Pyrex®) and a great resistance to abrasion.

Zerodur®–Zerodur® is a clear, yellow tinted glass ceramic recently developed by Schott Research Labs. Zerodur® is a homogeneous material whose thermal expansion approaches zero (one fifth of fused quartz).

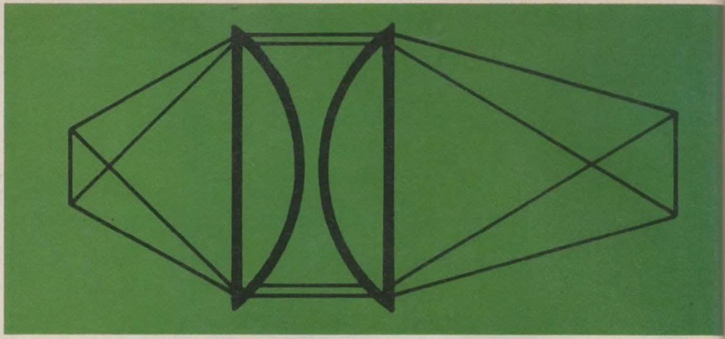
Precision Optical Flats. All single surface flats are certified by a Fizeau Interferometer to guarantee accuracies of .000002 in. (1/10 wave) or better. The second surface is pitch polished for better viewing of interference patterns. All edges are beveled. Each flat comes with its own attractive box for permanent protection.

Precision Optical Flat Mirrors. These mirrors are aluminized and then overcoated with silicon monoxide for protection. Exceptionally good for laser applications and holography as well as in telescopes, siderostats, coelostats, optical path folding, and as reflectors for autocollimating photographic lenses, telescope lenses and mirror.

Quality. These mirrors are of the same quality as our precision optical flats (.000002 in. in 1/10 wave or better) and come with the same certification and guarantees. For descriptions of Protected Aluminum, Enhanced Aluminum & Protected Gold.

			OPTICAL FLATS		OPTICAL FLATS MIRRORS	
			UNCOATED		PROTECTED ALUM.	
Dia.	Thickness	Material	Number	Price	Number	Price
1"	½"	Quartz	E1913	$ 127.50	E1919	$ 142.50
1"	½"	Zerodur®	E32,195	127.50	E32,196	142.50
2"	½"	Quartz	E1914	222.50	E1920	243.50
2"	½"	Zerodur®	E32,199	222.50	E32,200	243.50
3"	¾"	Quartz	E1915	451.50	E1921	467.50
3"	¾"	Zerodur®	E31,391	451.50	E31,396	467.50
4"	¾"	Quartz	E1611	643.50	E1615	673.50
4"	¾"	Zerodur®	E31,392	643.50	E31,397	673.50
6"	1"	Quartz	E1612	1271.50	E1616	1339.50
6"	1"	Zerodur®	E31,393	1271.50	E31,398	1339.50
8"	1½"	Quartz	E31,390	2331.50	E31,395	2411.50
8"	1½"	Zerodur®	E31,394	2331.50	E31,399	2411.50

ENHANCED ALUMINUM AND PROTECTED GOLD PRICES ON REQUEST.



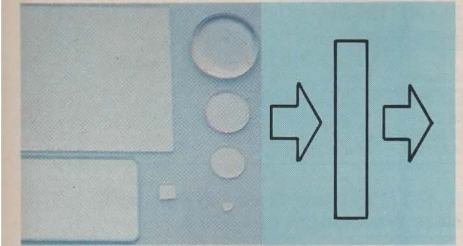
CONDENSER LENSES

Condenser Lenses concentrate light into a projected beam. Used in projectors, enlargers, spotlights, and photo cell systems, they are usually mounted in pairs so that their convex surfaces are nearly in contact. Requires lenses somewhat larger in diameter than the diagonal measurement of the slide. Refer to chart at right for approx. lens size.

In the listing below, abbreviations used for "lens type" include DCX for double convex, PCX for plano-convex, MNS for meniscus, and ASP for aspheric. In addition, better grade (BG), heat absorbing glass (HA), tempered glass (TEM) and "Pyrex®" brand glass are designated.

Picture or Slide Size	Dia. (mm)	F.L. (mm) of Condenser to Use
8mm	19 to 44	13 to 76
16mm	25 to 44	25 to 76
35mm	51 to 76	76 to 102
1¼" x 1⅝"	60 to 89	76 to 127
1⅝" x 2½"	89 to 127	114 to 178
2¼" x 2¼"	102 to 127	127 to 178
2¼" x 3¼"	114 to 127	140 to 178
2½" x 4½"	152 to 178	229 to 254
4" x 5"	165 to 203	254 to 305

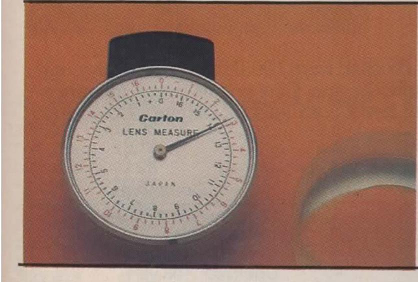
Number	Price	(mm)	(mm)	Type	Comments
E31,167	$ 18.00	31	21	DCX	TEM, ASP
E31,563	17.75	45	24	PCX	ASP
E32,341	19.50	44	27	PCX	ASP, CTD
E32,145	19.50	62	28	DCX	ASP
E30,499	15.75	33	32	DCX	Asymmetrical
E30,525	12.75	23	33	PCX	
E32,041	21.75	45	33	PCX	ASP
E32,235	6.95	25	35	PCX	
E32,162	19.75	49	35	PCX	
E42,788	22.25	50	35	PCX	TEM, ASP
E30,954	15.50	36	40	DCX	HA, CTD
E42,787	13.50	38	40	MNS	ASP, Pyrex
E60,359	24.50	67	46	PCX	ASP
E40,339	24.95	73	46	DCX	ASP
E30,733	20.75	46	47	DCX	HA
E1185	22.25	49	53	PCX	
E30,727	17.75	45	54	DCX	Asymmetrical
E31,564	17.75	45	54	DCX	ASP
E30,543	15.25	49	57	PCX	
E31,156	17.75	38	60	MNS	HA
E1184	20.75	42	60	MNS	TEM
E40,908	20.75	43	62	PCX	HA, Pyrex
E30,800	17.75	38	64	DCX	HA
E30,955	29.25	85x114	166	PCX	HA, TEM
E94,306	21.00	60	72	DCX	Asymmetrical
E30,952	24.50	63	74	DCX	HA, TEM
E94,891	21.00	63	75	DCX	
E30,953	24.75	71	75	DCX	HA, TEM
E94,912	20.50	60	76	PCX	
E32,146	19.50	64	81	DCX	ASP
E94,318	16.25	54	89	DCX	Asymmetrical
E32,342	19.50	34	92	PCX	CTD
E31,588	26.25	89	117	PCX	
E30,951	21.75	73	120	MNS	HA, TEM
E42,570	15.95	60	124	MNS	HA, Pyrex
E42,935	34.25	101	130	PCX	
E1144	40.25	113	141	PCX	
E42,934	46.50	127	141	PCX	
E61,253	18.00	64	160	DCX	
E32,511	75.75	114	165	PCX	Pyrex
E61,254	25.95	76	191	DCX	
E42,933	46.50	127	191	PCX	
E72,333	40.25	127	203	PCX	Matte
E42,932	48.50	165	203	PCX	Matte
E42,448	40.25	113	212	PCX	
E32,512	60.50	114	229	PCX	Pyrex
E32,508	105.50	152	229	PCX	Pyrex
E70,302	203.50	165	229	PCX	
E72,334	49.50	165	254	PCX	Matte
E61,106	59.00	114	286	DCX	
E32,509	90.75	152	300	PCX	Pyrex
E1189	195.50	152	356	PCX	
E32,510	75.75	152	400	PCX	Pyrex
E31,540	37.50	89x210	635	PCX	



OPTICAL WINDOWS

Finely crafted, perfect for optical neutrality applications. Except as noted, glass is ground and polished with the faces relatively parallel. Use as protective windows and much more.

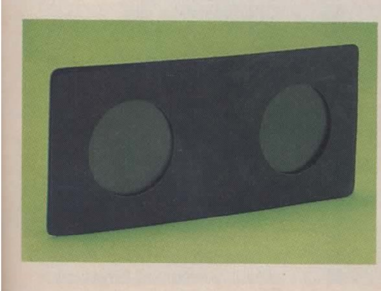
Number	Price	Dia. (mm)	Thick (mm)	Comments
E30,648	$7.25	4.5	1.0	
E2075	7.25	6.3	1.5	
E30,969	7.25	7.6 x 10.7	1.7	
E2187	7.25	8.2	1.3	Parallel
E40,216	7.25	9	5.0	
E31,027	7.25	9.7 x 9.7	2.4	
E2105	6.75	12.5	1.5	
E30,469	7.25	12 x 18	2.0	
E30,581	6.75	13	5.0	
E31,164	7.25	14	2.3	
E30,968	7.25	15 x 25	3.0	
E2080	7.25	16	1.6	
E2082	7.25	17	2.0	
E31,505	6.25	17	3.1	
E30,965	7.25	18	1.5	
E32,410	7.95	18	5.0	
E2098	7.25	18 x 18	2.0	Octagonal
E30,650	7.25	19	5.0	
E2083	7.25	19	2.9	
E2203	7.25	21	1.0	
E2084	7.25	21	2.0	
E2099	7.25	21 x 46	3.0	Cut Corners
E30,966	7.25	22	2.0	
E2086	7.25	23	8.0	Beveled
E32,348	9.50	23 x 37	3.0	Rounded Corners
E32,349	11.50	23 x 37	3.0	CTD. Rounded Corners
E30,970	7.25	24	3.3	
E30,773	7.25	25	3.0	
E30,975	7.25	25 x 32	3.5	
E2199	7.25	27	1.0	
E2206	7.25	27	2.0	
E32,455	12.50	27	8.0	¼ wave flat
E2089	7.25	27.4	3.0	
E2188	9.50	28 x 28	3.2	
E2186	5.95	29	2.9	
E31,028	7.25	29 x 47	1.5	
E2091	8.95	30	2.0	
E30,468	8.50	33	2.4	
E30,582	8.50	34	3.0	
E30,772	8.50	35	10.0	
E2093	8.50	35.9	3.0	
E2184	8.50	38	1.5	
E2065	10.50	41	8.0	2mm Beveled
E2207	8.50	41	2.3	
E31,029	8.95	42 x 46	1.5	Rounded Corners
E32,406	9.75	46	1.5	
E31,030	10.50	46 x 69	3.2	Ellipse
E30,971	10.50	49	1.8	
E30,972	8.95	50 x 80	1.3	
E30,974	8.95	51 x 63	1.5	4 Cut Corners
E30,967	10.50	54	2.5	
E2069	9.50	54 x 75	3.0	
E31,031	8.75	58 x 69	1.4	
E2070	9.50	63	3.0	
E31,219	10.50	64 x 9.5	3.0	Schott KG-4
E30,973	10.50	35 x 90	3.0	2 Cut Corners, Ctd
E31,033	10.50	67 x 86	1.6	Oval
E32,409	17.95	76.5	8.0	
E42,786	10.50	78 x 192	3.2	
E31,034	8.95	98 x 98	1.5	Plate Glass
E31,035	10.50	102 x 152	2.4	Plate Glass
E42,638	38.95	123	6.0	Flat. Coated 2nd
E31,036	12.25	127 x 178	2.4	Plate Glass
E31,037	11.50	140	2.4	Plate Glass
E31,038	16.50	203 x 254	2.4	Plate Glass
E31,790	27.95	236	3.0	w/Modified Reticle
E31,791	51.95	255	12.0	360° Compass Face
E31,039	44.95	360 x 455	2.9	



LENS DIOPTER GAUGE

Gauge measures lens curvatures; selects blanks, etc. Precision instrument will not scratch the glass lens. Measures from 0 to 17 diopters in one-quarter diopter increments. Includes directions to compute the f.l. of all spherical lenses. Handy useful tool.

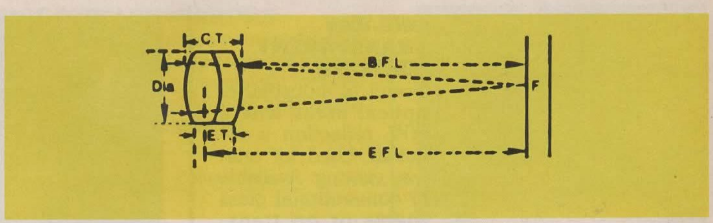
C34,647 **$159.50**



POLARIZED STRESS TESTER

Handy pocket-size tester is used to check stress patterns in liquids, liquid crystals, plastics and gemstones. Shows fracture marks and flaws not visible with the naked eye or with many magnifiers. Useful in checking the hardness formation of lenses. Brings out the Matese Cross pattern visible only in properly [illegible]ed lenses. 3″ x 3″ when 6″ x 3″ when open. Black.

E34,521 **$27.50**



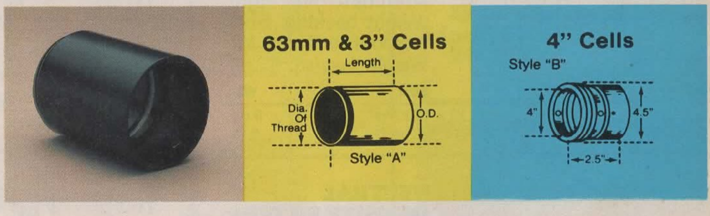
EDMUND DIFFRACTION LIMITED CUSTOM OBJECTIVE

High quality, collimator lenses are guaranteed to be color corrected and free of spherical aberrations of less than 1/4-wave front error. Each surface is individually inspected with a Zygo interferometer system during manufacturing, then tested and certified as a doublet.

C.T. = Center Thickness; **E.F.L.** = Effective Focal Length;
E.T. = Edge Thickness; **B.F.L.** = Back Focal Length

Dia. mm	63	63	76.2	101.6	127
Dia. inch	2.48	2.48	3	4	5
E.F.L.	14.00″	19.19″	33.11″	60.18″	75.00″
B.F.L.	13.63″	18.81″	32.66″	59.78″	74.51″
f/Ratio	5.9	8.1	11.0	15.0	15.0
C.T.	.819	.850	.919	.752	1.041
E.T.	.686	.752	.833	.832	.736
No.	**F31,402**	**F42,817**	**F30,976**	**F50,107**	**F70,163**
Price	**$199.50**	**$199.50**	**$394.50**	**$694.50**	**$1058.50**

63mm lenses are cemented doublets. 3″, 4″ & 5″ lenses are air-spaced.



COATED MOUNTED LENSES

Guaranteed to be color corrected and free of spherical abberations of less than 1/4 wave front error.

63mm Diameter Lens: 2.75 inch O.D. × 3.88 inch long; with integral dew shield. 2⁹⁄₁₆″-28 external thread on one end.

Mounted Lens 63mm f/6 f.l. 356mm **E31,401** **$239.50**

Mounted Lens 63mm f/8 f.l. 487mm **E42,818** **$239.50**

4-inch Coated Diameter Lens 4.5 inch O.D. × 2.5 inch long. Fits 4.0 inch O.D. tubing. See (F50,107). 60 f.l., air spaced

4-inch f/15 Mounted Lens **E70,128** **$585.50**

Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4

Surplus Television Projection Lens

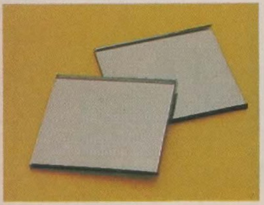
- **Make A Super Slide Projector**
- **Great To Project Oscilloscope Screens During Lectures**
- **Flat Plano-Plano Design**

Lens originally was designed for use in a three-gun television projection system. Useful in a variety of projects. Make your own slide projector. Project color transparencies to provide a large wall image in a small space. Lens is designed to be nearly in contact with the subject surface. Covers up to a 5″ diagonal source. Three element acrylic lenses are made from optical grade methyl methacrylate for clarity, sharpness and light weight. 5⅝″ in the front; 5¼″ in the back excluding four mounting ears. Two-piece focusing barrel. Plano-plano lens for flat images. For exhibitors, designers, tinkerers. Priced at a fraction of its original cost.

114mm f1.0 Lens
E34,528 **$79.50**

114mm f1.3 Lens
E35,890 **$79.50**

Extreme care is given to each order we receive. It will be checked and re-checked to insure its safe arrival. But, if damage or discrepancy should occur, Call: (416) 787-4581

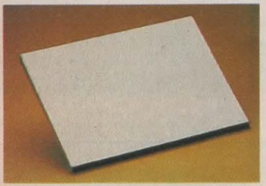


ONE-WAY TRANSPARENT MIRRORS

Useful in industrial & optical areas where 50% reflection is required. Used for one-way viewing. Available in conventional glass sheets or on transparent sheets of film.

Glass Number	Price	Comments
E30,630	8.25	2" x 2" (Pkg. of 2)
E40,044	8.25	2" x 3"
E40,045	10.75	3" x 4"
E40,046	14.50	4" x 5"
E40,047	21.25	5" x 7"

Mylar Film Number	Price	Comments
E83,002	49.25	42" x 48"
E70,326	36.50	21" x 36"
E60,113	14.50	11½" x 21"



FILM MIRRORS (NO GLASS)

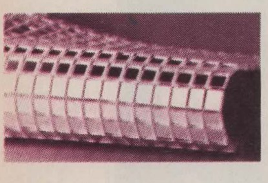
Cost much less than comparable front surface plate glass mirrors! Polyester film vacuum-coated with aluminum, stretched over lightweight backing. Shatterproof, will not fog. Weight 6oz./sq. ft.

Number	Price	Size	Wt.
E71,339	112,00	12 x 16 x 9/16"	9 oz.
E80,260	179.50	25 x 30¼ x 9/16"	4 lb.

NEUTRAL DENSITY FILTERS

Spectrally flat from 400 nm-900 nb. Variation from spectral flatness will not exceed ±15%. Neutral density tolerance– ±15%; Thickness–ND 0.15-2.0; less than 0.25" (6.4mm).

Optical Density at 500nm	Nominal % Trans.	$51.78 ea. ½ x 1"	$51.78 ea. ¾" x ¾"	$124.50 ea. 25mm Dia.
0.3	50	E30.88	E30,894	E30,933
0.5	32	E30,889	E30,895	E30,934
1.0	10	E30,890	E30,896	E30,935
1.3	5.0	E30,891	E30,897	E30,936
1.5	3.2	E30,892	E30,898	E30,937
2.0	1.0	E30,893	E30,899	E30,938

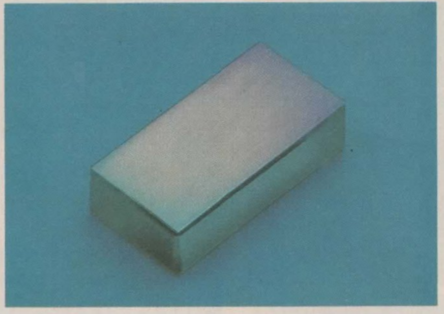


MULTIPLE MIRRORS ON FLEXIBLE BACKING

Create startling new designs on flat, concave or convex surfaces. Just peel back sheets for single use or cut.

Number	Price	Mirrors	Size
E71,260	$86.95	4608	¼ x ¼" on 12 x 24" sheet
E60,815	20.50	576	¼ x ¼" on 6 x 6" sheet
E60,239	20.50	144	½ x ½" on 6 x 6" sheet
E71,261	61.50	72	2 x 2" on 12 x 24" sheet
E60,241	17.50	36	1 x 1" on 6 x 6" sheet
E60,246	13.25	1	10 x 10 cm (4 x 4")
E60,247	13.25	1	10 x 15 cm (4 x 6")

EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4



INSTRUMENT QUALITY DIFFRACTION GRATING

For Research And Science. Well blazed and suited for use in monochromators and other instruments. Replicas on aluminized glass blanks, reproduced from extremely high-quality masters. Ideal for use by instrument makers, labs, students and schools.

15,240 (600/mm) Grooves Per Inch, Blaze Wavelength is 5,000 A

Number	Size Inches	Groove Length	Ruled Width	Price
E41,030	½" x 1"	½"	1"	93.25
E41,028	1" x 1"	1"	1"	118.50
E41,025	2" x 2"	2"	2"	212.50
E41,022	4" x 4"	4"	4"	362.50

15,240 (600/mm) Grooves Per Inch, Blaze Wavelength is 4,000 A

Number	Size Inches	Groove Length	Ruled Width	Price
E41,021	½" x 1"	½"	1"	93.25
E41,019	1" x 1"	1"	1"	118.50
E41,016	2" x 2"	2"	2"	212.50
E41,013	4" x 4"	4"	4"	362.50

30,480 (1200/mm) Grooves Per Inch, Blaze Wavelength of 2,400 A

Number	Size Inches	Groove Length	Ruled Width	Price
E41,039	½" x 1"	½"	1"	118.50
E41,037	1" x 1"	1"	1"	148.50
E41,034	2" x 2"	2"	2"	198.00
E41,013	4" x 4"	4"	4"	543.00

30,480 (1200/mm) Grooves Per Inch, Blaze Wavelength of 4,000 A

Number	Size Inches	Groove Length	Ruled Width	Price
E41,048	½" x 1"	½"	1"	118.50
E41,046	1" x 1"	1"	1"	148.50
E41,043	2" x 2"	2"	2"	206.50
E41,040	4" x 4"	4"	4"	543.00

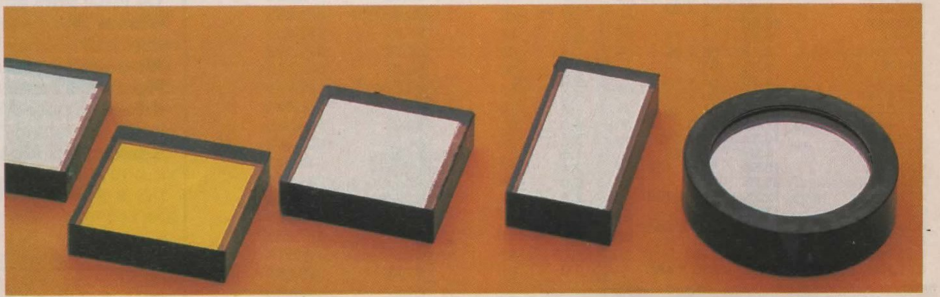
EXPERIMENTAL

Aluminized Glass Mounted Replicas. Due to slight imperfections, we cannot promise specific lines per mm. However, these imperfections should not affect your work area. All are between 600 and 1200 lines per mm. Blaze wavelength varies between 2,500 to 5,000 A. Manufactured on an interferometer-controlled ruling machine. Perfect for spectrographic studies.

½ x 1"	E42,284	$19.25
1" x 1"	E42,285	$26.25
2" x 2"	E42,286	$32.50

Low Cost Replica Concave Grating. The ground and polished optical surface is aluminum-coated and has 15,000 lines per inch. 3" dia., ⅜" thick. Blaze wavelength: 4,000 A. Radius: 100 cm. E50,220 $341.00

1,000 Lines/Inch Metalized Grating. 2" x 2" x 0.075" glass slides. Contains 50:50 ratio of black and clear parallel lines with specifications of one line per 0.001 inch. E30,609 $209.50



INTERFERENCE FILTERS

High quality optical, multi-layer dielectric interference filters. Blocked from 100.0 nm (1000 A) through 10,000 nm (100,000 A). Available in ½" x 1" or ¾" x ¾" or 25mm dia. size. Center wavelength tolerance: ±2.0 nm; Bandwidth tolerance: ±1.5 nm. Blocking range: far U.V. to far I.R. Degree of blocking: 10^{-4}-4.0 absorption units. Thickness: less than 6.4mm.

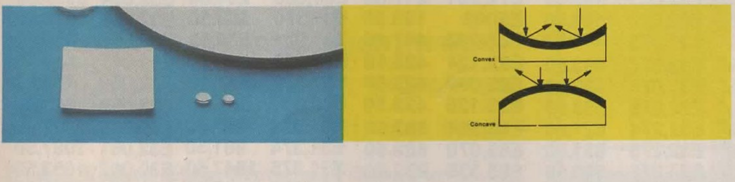
NM Wavelength	$51.75 ea. ½ x 1"	$54.25 ¾ x ¾"	$124.50 25mm Dia.	NM H.B.W.	Min.% Trans.	Comments
405.0	F30,688	F30,704	F30,913	9.2	40	Mercury Line & Analysis
420.0	F30,835	F30,846	F30,914	7.4	45	Mercury Line
435.8	F30,689	F30,705	F30,915	7.0	45	Chemical Analysis
450.0	F30,690	F30,706	F30,916	6.5	45	Chemical Analysis
460.0	F30,833	F30,844	F30,917	6.8	45	Chemical Analysis
480.0	F30,832	F30,843	F30,918	7.1	45	Chemical Analysis
505.0	F30,754	F30,755	F30,919	7.4	50	Chemical Analysis
520.0	F30,738	F30,744	F30,920	8.2	50	Chemical Analysis
540.0	F30,880	F30,884	F30,921	8.7	50	Chemical Analysis
546.1	F30,695	F30,711	F30,922	8.8	50	Mercury Line
550.0	F30,834	F30,845	F30,923	9.2	50	Chemical Analysis
577.7	F30,697	F30,713	F30,924	9.8	50	Mercury Line
589.6	F30,698	F30,714	F30,925	10.0	50	Sodium Line
600.0	F30,699	F30,715	F30,926	10.1	50	Chemical Analysis
620.0	F30,700	F30,716	F30,927	10.6	50	Chemical Analysis
650.0	F30,702	F30,718	F30,928	11.4	50	Chemical Analysis
656.3	F30,881	F30,885	F30,929	11.5	50	H Line
671.0	F30,882	F30,886	F30,930	10.8	45	Li Emission
765.0	F30,883	F30,887	F30,931	10.7	45	K Line Emission
905.0	F30,740	F30,746	F30,932	12.8	45	Gallium-Arsenide Emission

FRONT SURFACE

FIRST SURFACE MIRRORS

Aluminized on the surface nearest the incident light. Light is reflected without passing through any glass, minimizing light loss and secondary refraction. Mirrors are fragile, and vulnerable to scratching.

Number	Price	Size mm	Thick mm	Comments
E31,000	$7.75	1.5 × 1.5	0.1	Alum. both sides
E31,001	7.75	3.0 × 3.0	1.0	
E31,002	8.25	6.0 × 6.0	1.0	
E32,354	8.25	6.3 Dia.	.05	
E31,003	8.50	8.2 Dia.	1.5	
E31,004	9.25	9.0 × 9.0	1.0	
E40,238	7.75	9 × 19	1.8	
E32,353	8.50	9.4 × 26	3.2	
E31,418	9.50	9.5 × 11.2	1.2	
E31,005	9.25	12 × 12	1.0	
E32,271	27.95	13 × 18	4.0	⅛ Wave Ellipse
E31,766	7.25	14 × 19	1.25	
E30,546	7.75	14 × 19	1.8	
E31,006	9.75	15 Dia.	1.5	
E31,417	10.25	17 × 23	1.0	
E30,875	18.75	16 × 23	6.0	Flat to ¼ Wave
E31,007	9.75	18 × 18	1.0	
E30,625	9.75	18 Dia.	0.2	
E31,008	9.75	21 × 21	1.0	
E40,286	9.75	21 × 26	6.0	
E32,368	10.50	22 × 22	3.1	
E31,419	10.25	22 × 29	1.6	
E30,621	12.50	21 Dia.	1.2	
E32,454	37.95	21 × 30	6.0	¼ Wave Flat
E33,510	30.25	22 × 22	5.0	¼ Wave Flat
E30,836	34.95	22 × 30	6.3	⅛ Wave Ellipse
E30,428	10.25	22 × 35	3.0	
E31,420	10.25	23 × 25	1.7	
E31,426	12.75	23 × 37	1.7	
E30,286	33.75	25 × 35	6.0	Flat to ¼ Wave
E30,626	9.75	25 Dia.	0.2	
E31,009	11.25	26 Dia.	2.8	
E30,837	34.95	27 × 38	6.3	⅛ Wave Ellipse
E31,828	7.25	27 × 39	3.0	Rough Edges
E31,010	15.75	28 × 305	17.4	
E31,011	12.75	29 × 57	2.3	
E32,414	29.25	29 × 322	6.0	
E32.419	29.25	29 × 350	6.0	
E31,012	12.50	30 × 30	1.5	Not Coated
E30,622	10.25	30 Dia.	1.2	
E32,416	29.25	30 × 370	6.0	
E32,366	14.75	31 × 77	3.2	
E30,429	13.50	32 × 40	3.2	
E30,205	27.95	32 × 45	9.5	⅛ Wave Ellipse
E32,043	21.75	32 × 521	6.3	
E32,418	32.75	34 × 364	6.0	
E31,421	14.50	35 × 38	3.2	
E32,359	13.95	35 × 109	3.2	
E32,220	15.25	35 × 174	7.6	
E31,013	13.50	36 × 36	1.5	
E32,340	13.25	35 × 43	1.5	
E31,422	14.50	38 × 38	3.2	
E31,425	14.50	38 × 51	3.2	
E30,258	43.50	38 × 54	9.5	⅛ Wave Ellipse
E31,423	14.50	38 × 57	2.2	
E32,441	15.95	38 × 93	3.2	
E32,442	17.25	38 × 150	1.0	
E31,014	17.75	38 × 251	17.2	
E32,428	42.95	38 × 894	6.0	
E31,015	12.75	39 × 48	3.0	
E31,016	16.95	39 × 96	3.0	
E30,623	12.75	40 Dia.	1.0	
E32,221	15.25	40 × 82	3.2	
E32,415	42.95	41 × 248	6.0	
E591	15.50	43 × 46	3.0	
E547	15.50	43 × 140	3.0	
E32,370	14.50	44 × 54	3.2	
E31,017	15.75	46 Dia.	6.5	
E30,840	79.25	48 × 66	13.0	⅛ Wave Ellipse Pyrex
E42,214	15.95	49 × 70	3.0	
E41,619	13.75	49 × 49	0.8	
E32,365	16.25	50 × 125	3.8	
E32,367	15.95	50 × 126	6.0	
E31,424	12.25	51 × 51	1.6	
E31,018	7.95	51 × 73	3.0	22 mm Cut Corner
D40,040	12.50	51 × 76	6.0	
E33,511	68.50	51 Dia.	13.	Flat to ¼ Wave
E32,417	31.25	51 × 298	6.0	
E42,384	17.75	52 Dia.	5.0	
E31,578	15.95	52 × 101	9.0	
E40,773	15.95	57 × 70	3.0	
E32,360	15.25	57 × 76	6.0	
E41,131	106.50	57 × 81	16.0	⅛ Wave Ellipse Pyrex
E41,742	15.95	60 × 141	4.0	Beveled Edge Cut Corners
E41,166	19.95	60 Dia.	1.0	
E32,278	58.25	60 × 213	6.0	Enhanced Alum.
E32,279	68.75	60 × 270	6.0	Enhanced Alum.
E32,421	35.75	61 × 306	6.0	
E40,324	17.00	63 × 76	3.0	
E32,364	26.25	63 × 86	6.0	
E31,579	19.95	63 × 231	9.0	
E42,385	19.50	64 Dia.	3.0	
E42,213	17.00	65 × 70	3.0	
E32,422	27.75	66 × 168	6.0	
E41,620	15.50	67 × 67	1.0	
E30,209	29.50	67 × 83	5.0	
E42,583	127.50	67 × 94	16.0	⅛ Wave Ellipse Pyrex
D42,212	16.50	70 × 97	3.0	
D42,211	19.50	70 × 194	3.0	
E32,420	35.75	70 × 305	6.0	
E32,371	13.25	73 × 116	3.2	
E31,020	24.25	75 × 351	6.0	
D40,041	16.50	76 × 102	6.0	
E42,584	169.50	76 × 108	19.0	¼ Wave Ellipse
D31,829	18.50	79 × 140	3.0	
E32,361	17.50	79 × 147	3.2	
E41,621	16.50	81 × 100	1.0	
E32,362	18.00	85 × 101	3.2	
E32,369	16.25	95 × 81/32	3.2	Trapezoid
D40,042	30.50	102 × 127	6.0	Beveled Edge
E31,022	27.95	119 × 203/248	6.4	Trapezoid
E41,320	45.25	127 × 178	1.6	Plate Glass
E40,043	36.50	127 × 178	6.0	
D31,023	28.50	127 × 203	3.0	Plate Glass
D31,024	29.50	133 × 158	3.0	Plate Glass
E31,562	30.50	133 × 178	3.2	
E31,025	27.95	149 × 171/260	6.4	Trapezoid
E41,405	30.50	169 × 194	6.0	
E32,249	26.50	183 × 160		
E32,358	68.75	200 × 235	6.0	Enhanced Alum.
E41,321	79.25	204 × 254	1.6	Plate Glass
D40,067	54.80	204 × 254	6.0	Plate Glass
E32,248	76.50	254 × 313	6.0	
D85,036	79.50	254 × 356	6.0	Plate Glass
E31,026	53.00	254 × 406	6.0	Seconds
D85,206	98.50	406 × 406	6.0	Plate Glass
E85,207	189.50	408 × 609	6.0	Plate Glass



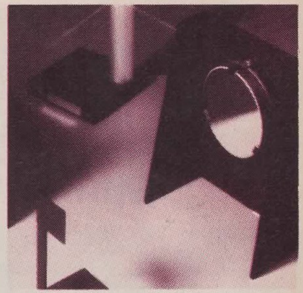
RADIUS MIRRORS

Radius Mirrors are curved surfaces, usually spherical, that have been aluminized and overcoated. If concave, the mirror has a negative focal length and will focus light. If convex, the mirror has a positive focal length and will disperse light. Unless specified, all the Radius Mirrors listed below are glass.

Number	Price	Size (mm)	F.L. (mm)	Comments
E32,223	12.95	7	−3.5	Concave
E32,228	13.75	10	−4.3	Concave
E32,227	12.95	10	−30	Concave
E42,965	12.95	15	−7.5	Concave
E32,226	12.95	15	−40	Concave
E42,966	14.95	24	−9.3	Concave
E42,937	14.95	25	−8	Concave
E42,967	14.95	25	−25	Concave
E32,408	17.95	27	−45	Concave
E41,052	21.00	32	−25	Concave
E41,051	16.95	33	−21	Concave
E566	7.95	35	−15	Concave, Metal
E42,669	17.00	35	−16	Concave
E41,053	17.00	35	−38	Concave
E40,323	18.00	40	−14	Concave
E32,344	15.50	46	−25	Concave 2nd Surface
E31,560	15.50	49	−25	Concave
E42,969	21.25	51 × 51	−109	Concave
E42,842	12.75	51	−23	Concave, Metal
E42,970	36.75	53 × 110	−76	Concave
E32,343	19.25	52	−35	Concave
E32,229	9.75	76	+167 to 400	Compound Curve
E32,192	32.25	79	−100	Concave
E60,616	44.50	152	−406	Concave 2nd Surface
E60,617	45.50	203	−406	Concave 2nd Surface
E32,225	24.95	215	−530	Concave 2nd Surface
E42,973	15.95	216	−500	Concave 2nd Surface 48mm Ground Spot
E80,097	100.50	406	−432	Concave 2nd Surface
E42,974	16.75	26	+62	Convex
E42,975	20.25	42	+52	Convex
E42,976	24.50	62	+17	Convex
E42,977	58.25	95	+51	Convex

ORDER FROM US DIRECT

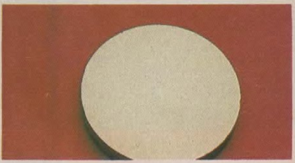
Efstonsciene has only one location, and services all orders directly from our Toronto, Ontario premises.



4¼" OR 6" SCHLIERENS HAVE TWO ALUMINIZED FRONT SURFACE MIRRORS

Mirrors are f/10 overcoated with silicon monoxide and mounted in metal stands. Versatile optical test method. Can be used to observe changes in the refractive index of air, to study air current flow, determine sound velocity and the mass of microscopic particles, test the internal character of glass, and photograph air currents and sonic fields. Also have a Foucault Tester, mirror covers & instructions.

4¼ Inch, 45" F.L.
E71,014 $458.50
6 Inch, 60" F.L.
E71,013 $595.50



GOLD MIRRORS

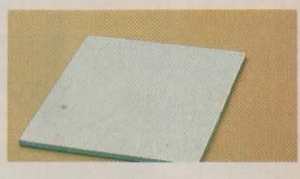
Separate infrared & visible light. Reflectivity: 35% at 4000-4500 A; 46% at 5000 A; 81% at 5500 A; 92% at 6000 A; 98% at 7800 A to beyond 15 microns wavelengths. Inconel and gold.

Concave	Price	Size (mm)	F.L.
C41,806	22.00	32 dia. × 5	25
E41,808	123.50	75 dia. × 8	760

Flat	Price	Size (mm)	Thick (mm)
E41,801	35.25	76 × 102	6
E41,800	45.25	102 × 127	6
E41,802	80.50	127 × 178	6
E71,709	239.50	203 × 254	6

Precision Flats—1/4 Wave

SN	Price	Size (mm)	Thk
E32,432	48.00	16 × 23	6
E32,433	60.00	22 × 22	6
E32,434	72.00	25 × 35	6
E32,435	116.50	51 Dia	13



COLD MIRROR

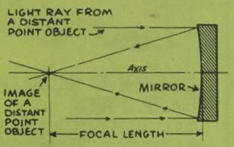
Cold Mirror (4" x 5") will reflect 90% of visible light & allows 80% transmission of I.R. waves. ⅛" thick. Great for microscopy & specimen illumination.

E42,414 $82.50

SURPLUS—2⅝" × 3½" × ⅛" thick, same features as above.

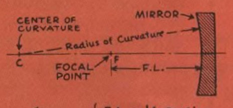
E31,232 $54.50

FIRST FACTS about Telescope Mirrors


LIGHT RAY FROM A DISTANT POINT OBJECT
AXIS
MIRROR
IMAGE OF A DISTANT POINT OBJECT
FOCAL LENGTH

FOCAL LENGTH

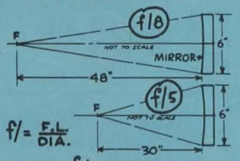
DISTANCE FROM SURFACE OF A MIRROR TO THE POINT WHERE IT FORMS AN IMAGE OF DISTANT OBJECT



ALL TELESCOPE MIRRORS { F.L. = ½ Radius
Radius = 2 × F.L.

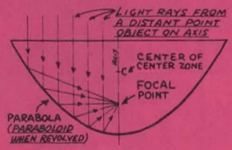
RADIUS OF CURVATURE

THE RADIUS OF A SPHERICAL MIRROR, OR, RADIUS OF CENTER ZONE OF A PARABOLIC MIRROR



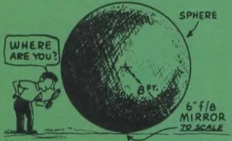
f/VALUE

THE FOCAL LENGTH OF A LENS OR MIRROR DIVIDED BY ITS DIAMETER. f/8 IS MOST COMMON


LIGHT RAYS FROM A DISTANT POINT OBJECT ON AXIS
AXIS
C
CENTER OF CENTER ZONE
FOCAL POINT
PARABOLA (PARABOLOID WHEN REVOLVED)

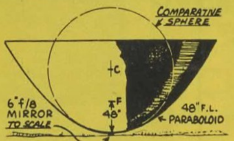
PARABOLA

A CURVE WHICH REFLECTS PARALLEL LIGHT TO A POINT. *THE PARABOLA REVOLVED FORMS A PARABOLOID*


SPHERE
WHERE ARE YOU?
8 FT.
6" f/8 MIRROR TO SCALE

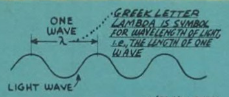
SPHERICAL MIRROR

A MIRROR WITH A SPHERICAL SURFACE. THIS SHAPE MAKES A GOOD TELESCOPE IF f/VALUE IS f/10 OR HIGHER



PARABOLIC MIRROR

A MIRROR WITH A SURFACE WHICH IS A REVOLUTION OF A PARABOLA. IT IS THE PERFECT SURFACE FOR TELESCOPES


ONE WAVE
λ
GREEK LETTER LAMBDA IS SYMBOL FOR WAVELENGTH OF LIGHT, i.e., THE LENGTH OF ONE WAVE
LIGHT WAVE

ONE WAVE (λ) = .000022" (22 MILLIONTHS-OF-AN-INCH)
¼ WAVE (¼λ) = .0000055" (5½ MILLIONTHS-OF-AN-INCH)
⅛ WAVE (⅛λ) = .00000275" (2¾ MILLIONTHS)

WAVELENGTH OF LIGHT

...IS USEFUL AS A UNIT OF MEASURE TO SPECIFY THE SURFACE ACCURACY OF A LENS OR MIRROR

HIGH QUALITY INDUSTRIAL AND TELESCOPE MIRRORS

All Edmund manufactured mirrors are precision made and **guaranteed** to provide stress-free performance of **⅛ wave surface accuracy** or better. Utilizing double annealed Pyrex® blanks for thermal stability, each front surface and overcoated mirror is progressively tested and inspected during its production process.

Metallic Reflective Coatings

The Edmund optical facility manufactures a wide range of precision paraboloidal, spherical, elliptical and flat mirrors. These products are offered in several metallic and dielectric combinations.

Protected Aluminum

Our standard protected aluminum is the most popular coating in use today for applications in the visible & near infrared. Silicon monoxide (SIO) is used as an overcoating to protect the aluminum. This treatment retards oxidation of the metal film, maintaining peak performance while providing an abrasion resistant surface for cleaning & handling purposes.

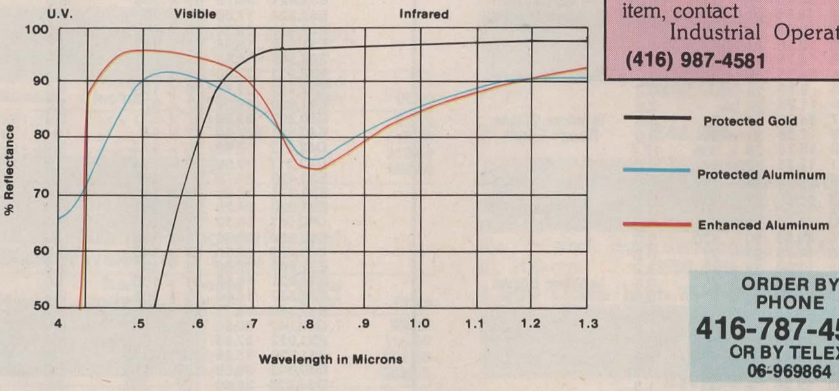
Enhanced Aluminum

For applications requiring greater levels of reflectance, aluminum is overcoated with a film of multilayer dielectrics. Significantly greater reflectivity is achieved while retaining the excellent handling characteristics of protected aluminum.

Protected Gold

For most applications throughout infrared and specialized use in the visible, silicon monoxide (SIO) is applied over gold to produce a hard finish.

ATTENTION:
OEM, Engineers, Buyers of Precision and First Surface Mirrors. Can't find what you need? If you have a requirement for a **QUANTITY** of a non-stock item, contact
Industrial Operations at
(416) 987-4581



ORDER BY PHONE
416-787-4581
OR BY TELEX:
06-969864

PRECISION PARABOLIC MIRRORS

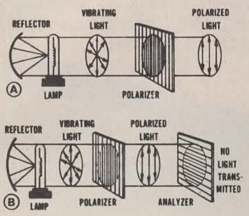
Dia.	f/ Ratio	App. f.l.	App. Thick	Uncoated Number	Uncoated Price	Protected Alum. Number	Protected Alum. Price	Enhanced Alum. Number	Enhanced Alum. Price	Protected Gold Number	Protected Gold Price
3"	6	17½"	⅜"	E32,064	$59.50	E31,400	65.95	E31,366	86.95	E32,048	197.50
4¼"	4	17½"	¾"	E32,065	101.50	E42,451	114.50	E31,367	193.50	E32,049	274.50
4¼"	6	25½"	¾"	E32,066	101.50	E32,121	114.50	E32,126	193.50	E32,050	274.50
4¼"	8	34"	¾"	E32,067	101.50	E32,122	114.50	E32,127	193.50	E32,051	274.50
6"	4	24"	1"	E32,069	215.50	E32,123	239.50	E32,128	294.50	E32,052	382.50
6"	5	30"	1"	E32,070	193.50	E72,472	217.50	E31,368	294.50	E32.053	393.50
6"	6	36"	1"	E32,071	193.50	E72,361	217.50	E31,369	294.50	E32,054	$393.50
6"	8	48"	1"	E32,072	169.50	E5002	193.50	E31,370	266.50	E32,055	376.50
8"	5	40"	1⅜"	E32,073	414.50	E85,298	447.50	E31,371	588.50	E32,056	674.50
8"	6	48"	1⅜"	E32,074	393.50	E32,124	425.50	E32,129	567.50	E32,057	653.50
8"	8	64"	1⅜"	E32,075	393.50	E85,069	425.50	E31,372	567.50	E32,058	653.50
8"	10	80"	1⅜"	E32,076	393.50	E32.125	425.50	E32,130	567.50	E32,059	653.50
10"	6	60"	1¾"	E32,274	621.50	E85,334	663.50	E31,373	981.50	E32,060	1087.50
10"	8	80"	1¾"	E32,275	621.50	E85,070	663.50	E31,374	981.50	E32,061	1087.50
12½"	6	75"	2⅛"	E32,276	890.50	E85,335	932.50	E31,375	1547.50	E32,062	1653.50
12½"	8	100"	2⅛"	E32,277	890.50	E85,071	932.50	E31,376	1547.50	E32,063	1653.50

PRECISION SPHERICAL MIRRORS

Dia.	f/ Ratio	App. f.l.	App. Thick	Uncoated Number	Uncoated Price	Protected Alum. Number	Protected Alum. Price	Enhanced Alum. Number	Enhanced Alum. Price	Protected Gold Number	Protected Gold Price
2½"	10"	25"	⅜"	E32,081	$38.50	E40,913	43.50	E32,077	176.50	E31,377	58.50
3"	10"	30"	⅜"	E32.082	$51.50	E50,082	57.95	E32,078	184.50	E31,378	77.50
4¼"	10"	45"	¾"	E32,083	91.75	E50,051	106.50	E32,079	259.50	E31,379	178.50
6"	10"	60"	1"	E32,084	149.50	E71,026	175.50	E32,080	359.50	E31,380	257.50

PRECISION ELLIPTICAL FLAT MIRRORS

Minor Axis	Major Axis	App. Thick	Uncoated Number	Uncoated Price	Protected Alum. Number	Protected Alum. Price	Enhanced Alum. Number	Enhanced Alum. Price	Protected Gold Number	Protected Gold Price
0.500	.707	⅛"	E32,270	28.75	E32,271	31.50	E32,272	56.50	E32,273	67.50
0.875	1.237	¼"	E32,093	29.50	E30,836	32.50	E32,131	57.50	E32,085	68.50
1.062	1.502	¼"	E32,094	30.50	E30,837	33.50	E32,132	58.50	E32,086	69.50
1.250	1.768	⅜"	E32,095	31.50	E30,205	34.50	E32,133	59.50	E32,087	70.50
1.500	2.121	⅜"	E32,096	41.50	E30,258	47.95	E32,134	74.50	E32,088	94.50
1.875	2.651	½"	E32,097	84.75	E30,840	91.50	E32,135	113.50	E32,089	156.50
2.250	3.182	⅝"	E32,098	114.50	E41,131	119.50	E32,136	142.50	E32,090	187.50
2.625	3.712	⅝"	E32,099	134.50	E42,583	144.50	E32,137	194.50	E32,091	235.00
3.000	4.242	¾"	E32,100	178.50	E42,584	187.50	E32,138	292.50	E32,092	336.50



Make large sun visors for car and boat.

BROAD APPLICATION POLARIZERS

Intended for use in eyeglasses, airplane cockpit windshields, and many optical uses, this sheet polarizing material is ideal for experimenting, photography, microscopy, unique lighting effects, advertising displays, teaching and more.

14 X 24″ POLARIZING SHEETS

Only 0.03″ thick and can be easily cut. Transmission: 23-25%; polarizing efficiency over 99%. Resistant to fading and delamination.

Number	Size	No. of sheets	Price
E71,939	14 x 24	1	$64.50
C49,553	12 x 14	1	$39.50
C49,554	7 x 8	1	$19.50
C49,555	4½ x 6	1	$ 8.50

OUR SANDWICH TYPE POLARIZERS ARE OFFERED AT SIZEABLE SAVINGS!

Only minor imperfections. Rigid polarizer between two sheets of plastic. Trans. approx. 30% for single sheet and 22% for two sheets placed together.

Number	Price	Size	No. Sheets
E70,887	$37.75	7″ × 24″	1
E70,888	73.50	7″ × 24″	2
E60,638	35.25	6″ dia.	2 discs
E40,990	27.50	3¼″	2 discs

EXPERIMENT W/POLARIZED LIGHT W/OUR 2 x 2 INCH FILTERS

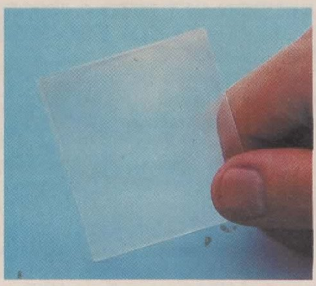
Make all sorts of colored patterns! Trans.: 23-25%. 0.03 in. thick.

Package of 10 **E41,168A** **$11.50**

Small, Round Glass-Mounted Filters For Convenience and Protection.

Number	Price	Dia.	Thick.	Trans
E0633	$17.50	20mm	2mm	20%
E32,468	18.25	23mm	2mm	20%
E40,209	19.50	47mm	2mm	35%

*Pkg. of 2 One cover glass in neutral filter.

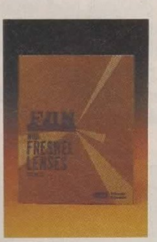


FRESNEL LENSES

Low cost quality lenses offer a larger diameter, lightweight lens with a short focal length. A Fresnel lens is a flat, thin piece of plastic in which are molded a series of small concentric stepped zones. They extend from center to outer margins. Each groove is a minute refracting facet capable of bending light. Its transmittance (ability to pass light) is greatly increased over that of a conventional lens of the same focal length.

Number	Price	Size Inches	F.L. Inches	Thick Inches	Lines Per Inch
E30,389	$17.25	2⅛ × 2¼	3	1/16	215
E41,351	28.75	4 × 5	8½	1/16	50
E41,352	29.95	5 × 7	8½	1/16	50
E40,803	29.95	5½ × 6	8½	1/16	50
E31,553	48.25	11¼ Sq.	8½	1/16	100
E42,808	20.95	6 Dia.	13½	1/64	50
E40,954	41.75	6 Sq.	10	3/32	110
E72,247	23.95	6¼ × 9⅛	12½	1/16	120
E42,807	36.25	6½ Sq.	13½	1/16	50
E61,191	18.25	6⁹⁄₁₀ × 9¼	12½	1/16	120
E60,826	31.25	8 × 10	8½	1/16	50
E60,498	31.25	8 × 10	12¼	1/16	50
E71,315	28.50	10½ Sq.	8½	1/16	50
E72,250	20.95	10¾ Dia.	-3½	1/16	50
E72,529	31.25	10 ¹³⁄₁₆ Sq.	8½	5/32	50
E72,246	31.25	11 Sq.	9¼	1/16	50
E70,878	31.25	11 Sq.	18	1/16	50
E70,670	31.25	10½ Sq.	13½	1/16	50
E71,316	48.25	11⅛	5½	5/32	50
E70,877	33.75	11¼ Sq.	16	3/32	50
E60,500	53.95	11½ × 16⅛	24½	3/32	50
E31,526	92.25	11.8 × 11.8	11.8	1/8	50
E70,533	38.25	10½ Sq.	8½	1/16	50
E72,332	31.25	15 × 18	8	3/32	50
E72,062	33.75	15½ Dia.	11½	5/64	50
E70,716	143.00	16½ × 21⅛	24	1/8	50
E32,139	64.75	18 Dia.	16	3/32	50
E70,717	192.50	19 × 24¾	24	1/8	50
E34,747	242.00	28½ × 37¼	54	3/16	40
E31,139	264.00	31½ × 41	40	3/16	40

†Large quantities available
††Includes "Fun With Fresnel Lens"
†††Cemented double lenses
★★★Frosted
★w/10mm dia. hole



"FUN WITH FRESNEL LENSES"

Clearly written book contains plans and instructions for building an image brightener, solar furnace, camp cooker, overhead projector and camera obscura. Each requires only one Fresnel lens.

E9053 **$10.50**

LARGE FRESNEL LENS

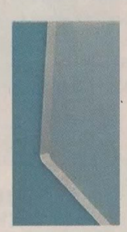
Precision crafted lens has an 8½″ f.l.; 50 lines per inch. 10½″ sq. inch x ¹⁄₁₆ inch thick. Includes "Fun With Fresnel Lens" book.

E70,533
$38.25

IMAGE INTENSIFIER

A 176 x 235mm Fresnel with a 318mm focal lenght frosted on the plane side. Focuses light from image to viewer 1′.

E61,191 **$19.25**



GIANT FRESNEL LENS

Measures 31″ × 41″ × ³⁄₁₆″. 40″ focal length. Use lens to harness the power of the sun, creating a solar torch with industrial temperatures reaching 3000°F. For soldering, brazing and melting a wide range of metals.

E31,139 **$264.00**

DIFFRACTION GRATING IN SHEETS OR ROLLS

Sheets and rolls of quality diffraction grating material for a wide variety of uses! All rolls and sheets measure 8½ inches wide. Transmission type diffraction grating.

8½″ × 11″ sheet	**E40,267**	**$13.95**
6-Ft. Roll	**E50,180**	**31.50**
24-Ft. Roll	**E70,565**	**105.50**
100-Ft. Roll	**E70,567**	**314.00**

DIFFRACTION GRATING KIT

Includes two 5½″ × 8½″ sheets (1 transmission, 1 reflection) of diffraction grating; four self-adhesive, circular-patterned gratings; double-faced tape strip, two 1″ diameter pieces of mounting glass; two 2″ × 2″ card viewers. Also includes the "Edmund Idea Book", A do-it-yourself decorating kit.

Experimenter's & Designer's Diffraction Kit **E70,563** **$26.50**

THE EDMUND
DIFFRACTION GRATING
IDEA BOOK

TURN YOUR TELEVISION SET INTO A HOME SENTRY SYSTEM. TV SENTRY LETS YOU MONITOR YOUR FRONT OR BACK DOOR

With the TV Sentry your present TV becomes a security surveillance system... so simple to install... it's like connecting an indoor antenna to your set. The secret is a miniature TV camera which can be set to monitor anywhere you choose... front or back door, parking area, pool, etc. To see the area being monitored, simply switch to channels 3 or 4 (depends on your area) on your TV. The camera is engineered with all the most advanced innovations, including built-in automatic light compensation that insures a clear, sharp picture under virtually all lighting conditions. Unit weighs only 9 pounds. Features a fully adjustable mounting to turn 360° horizontally and 90° vertically. Installs in seconds with just four screws. 50 feet of cable is included to connect camera to your TV. Can also be connected to video recorder for making video tapes.

TV Sentry **C33,140 $369.50**

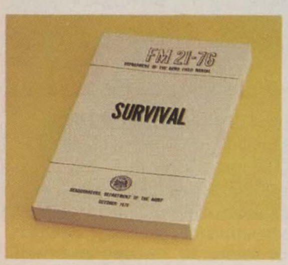
9 inch Black & White T.V. monitor, bright, high contrast display detail and clarity.

C49,802 $249.50

ELECTRONIC MOTION DETECTOR

Sensitive solid-state unit sounds a 90db alarm when it senses movement in its 10′ path. Narrow field of view for increased sensitivity. 9″X9″X6″ unit in a black plastic housing. Powered by nine-volt cell. 360 degree swivel head. Can be wall-mounted, ceiling-mounted or sit on any flat surface. Inexpensive security device. Can be used to announce visitors, etc.

E35,265 $59.50



SURVIVAL... ARMY STYLE

Army field manual is written to guide military troops in the art of staying alive in any environment by securing proper shelter, food and water. While a bit dated (it was released in 1970), the tactics of survival have not changed. Provides a wealth of information on edible plants, cooking wild food, navigational aids, first aid treatment, etc. 287 pages. Paperback.

Army Survival Book
E9675 $23.50

How To Get ANYTHING ON ANYBODY

"HOW TO GET ANYTHING ON ANYBODY." THE A TO Z HANDBOOK ON UNDERCOVER OPERATIONS

This no nonsense book is a must for anyone wanting to learn the proper techniques of intelligence and surveillance. Learn how to track anyone.. anywhere, anytime. Organize an intelligence campaign against any target. Scramble a telephone conversation or check a driver's record. 268 pages. Paperback.

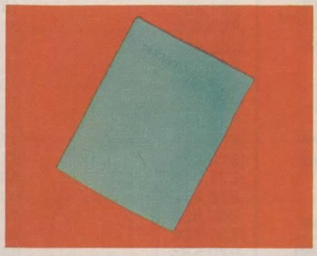
"How To Get Anything On Anybody" E9664 $74.50

TEKNA MICRO-LITE

A FLASHLIGHT THAT WILL NEVER LEAVE YOU IN THE DARK

Impact-resistant plastic Tekna light is explosion-proof and waterproof to 2,000 feet. Powered by a lithium cell (included), it will keep the 1,200 candlepower krypton gas lens bulb burning for four continuous hours. Cell has a 10-year storage life.

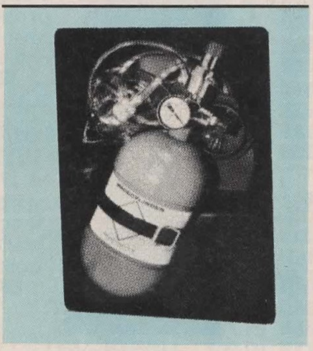
Tekna Flashlight
E33,402 $39.50
Replacement Battery
E33,829 $16.50
Replacement Bulb
E33,830 $16.50



CATCH UP ON THE LATEST IN ELECTRONIC SURVEILLANCE DEVICES AND APPLICATIONS

Detailed, well researched book explains the latest in surveillance techniques. Learn about telephone room eavesdropping devices, general purpose surveillance protection systems, microphones, wiretaps, tape recording devices and much more. 169 page book. Comes with detailed charts and illustrations. 9″ by 12″ paperback book.

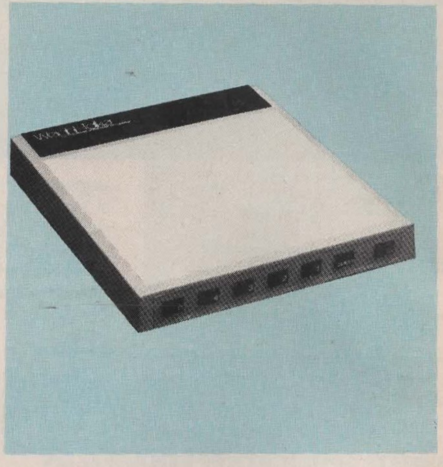
Science of Electronic Surveillance Book
D33,578 $39.50



EMERGENCY OXYGEN UNITS

It is peace of mind to have handy an oxygen cylinder with mask and flow regulator. We are all humans and in case of a need a unit should be available.
This comes complete with sturdy case, connecting tubing and brief instructions.

Oxy Uni-Pack
C49,531 $219.50
Oxy Due-Pack
C49,538 $299.50



WEIGHT TALKER

Here is your friendly weight scale; friendly because it shows no numbers. It talks and it will tell you your weight in pounds or kilograms. It even remembers your last weight and tells you to compare with your present weight. There are five such memories for all the members of the family plus an extra one for a guest. After wishing you "have a nice day/goodbye" the WEIGHT TALKER will automatically switch off. It is a precision scale you can trust. "What will they think up next"

Weight Talker **C49,512 $179.50**

YOUR COMPLETE INDEX IS ON PAGE 111

Pollenex
Smoke GRABBER

NO SMOKERS ASHTRAY

For the non-smokers inhaling somebody else's smoke can be as hazardous as the actual smoking. This ashtray automatically inhales smoke from cigarettes or cigars, filters the air and exhales clean air at the bottom without smell. The room's air therefore is more healthy and prevents smoke residue from accumulating on clothing and furniture. Battery operated (2 C not included). A good investment in preventative medicine.

Ahstray **C49184** **$29.50**

Extreme care is given to each order we receive. It will be checked and re-checked to insure its safe arrival. But, if damage or discrepancy should occur, Call: (416) 787-4581

EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4

NOW ENJOY TWO-WAY COMMUNICATION WHILE YOU'RE WORKING OR PLAYING **Range ¼ to ½ mile away.**

Here at last is a revolutionary communications instrument that has a wide range of applications. Talk as you carry on your activity. Useful to monitor invalids. Ideal as security device, on construction sites, on stage or for film and video operations. It's made of durable, high impact ABS plastic and fits comfortably on your head to provide hands-free operation. Receives signals up to ¼ mile away! A special voice-activated transmit-receiver switch-over activates the unit when you're spoken to or when you speak. Easy to use and fun to operate. Comes complete with a comfortable headband, whip antenna, voice tube and microphone, all built into lightweight transmitter for your belt (6 oz.). It uses one 9V battery (not included). Any number of units can be operated at the same time on the same channel. 2¼" x 4¼" x ¾". A minimum of two required.

Two-Way Talker C33,105 $89.50 **each**

TALKMATE
TALKMATE

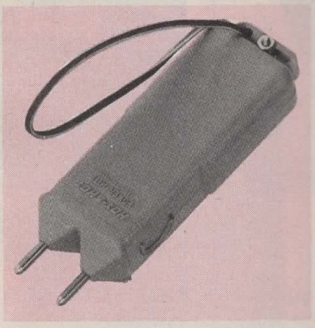
YOUR COMPLETE INDEX
IS ON PAGE 111

FILTER MAKES YOUR FLASHLIGHT INFRARED!

This 43.6mm dia. x 2.8mm thick filter fits any standard flashlight. Low cost I.R.!
E42,143 $13.95

INFRARED FILTER IS IDEAL FOR SNIPERSCOPES AND LIGHT SYSTEMS

Glass filter with coating on 1 surface. 5⅜" x ⅛".
E60,033 $29.50



HORNET

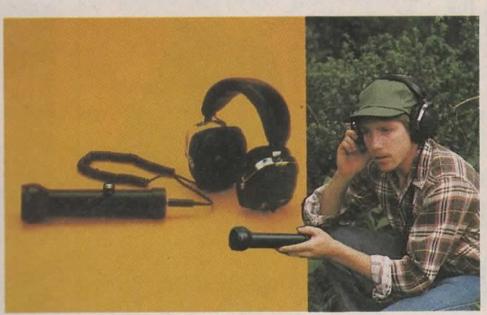
Now there's a defensive weapon that's small enough to carry in the palm of your hand and will deter the toughest attacker. The Hornet provides electrical impulses strong enough to free yourself from an attacker. It is designed with a leather wrist-strap to secure its position. Powered by two standard batteries, it delivers a non-lethal jolt of 2,000 volts.

Hornet No. D49,394 $89.50
Holster No. D49,395 $21.50

PULL IN VOICES HALF A MILE AWAY WITH OUR ELECTRONIC PARABOLIC MICROPHONE!

Our 18¾" plastic shield reflects sound waves to a sensitive microphone. Low frequency filter cuts background noise under 150 cycles. Frequency-response: 150 to 600 ohms. Amplified output at phone jack. Earphones and pigtail cable for recorder connection included. Uses two 9V batteries (not included).

Parabolic Mike C1649 $479.50
Intermediate Mike (without earphones and monitoring circuitry) C1665 $267.50



HEAR A WHISPER AT 100 YARDS!

Search the forest for wild game before they near your sight. Catch a song bird humming away in its nest or sweep your home for prowlers. Bionic ear can hear a whisper at 100 yards, and the special booster lets you pinpoint sounds while eliminating surrounding background noise. Flashlight-size amplifier passes sounds to user through stereo headphones. Automatic shut-off circuit prevents incoming sounds that could damage ears. Operates on 9V battery (not included).

EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street

NIGHT VISION SYSTEM LETS YOU OBSERVE OBJECTS IN DARKNESS

Dark Invader utilizes a 25mm screen, second generation image intensifier tube which amplifies existing light up to 55,000 times. Tube will produce images with the resolving power of 28 line pairs per millimeter or better. 135mm f2.8 lens; 32mm 2" eyepiece. 29 ozs. 7" long.
E34,572
Price on Request

INFRARED VIEWING IN EXCESS OF 200 FEET!

This high quality instrument comes complete with viewer, telephoto lens, hand-held light source with infrared filter, power pack and carrying case. Adapter lets you run illuminator off 12V power pack or car battery.

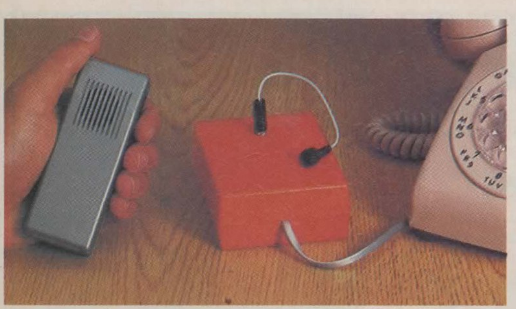
Find-R-Scope C31,070 $3395.00
Telephoto Lens Only C31,071 $795.00

WIDE-ANGLE FIELD OF VIEW FIND-R-SCOPE

With monocular, infrared light converter. Focus range of 6" to infinity. Field of view: 33°. Magnification: 1 to 1 @ 1 meter. 5.37" x 2.12" x 7.97".

Find-R-Scope C31,074 $2545.00
Pack 12V, 8A/Hr. C61,235 $189.50

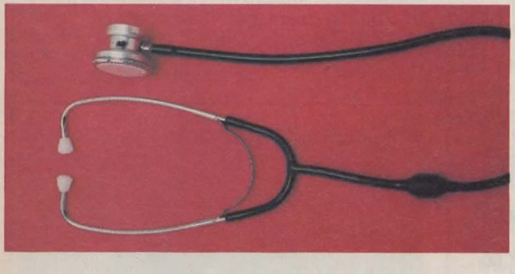
Security And Surveillance



LISTEN IN AT YOUR HOME, OFFICE OR VACATION HIDEAWAY EVEN WHEN YOU ARE MILES AWAY...SIMPLY BY DIALING THE TELEPHONE

The "Listener" allows you to check in on your home, office or vacation retreat just by dialing the phone. Dial the number of the building your are checking on, enter the remote signal and begin listening. Super sensitive microphone clearly picks up even the slightest of sounds within a 150 foot radius. Check in on the elderly, babysitters or keep tabs on your property. Feel secure knowing that no one is there or know what's actually going on. Perfect for worriers who want to know if their distant properties are safe. The "Listener" measures only 3″ x 4″. Comes with a seven foot extendable cord. Cord attaches to any modular telephone jack. The "Listener" is compatible with other telephones using the same line or it can be used as a stand alone device. Remote control operates from one 9V battery. The "Listener" is activated at the touch of a button. FCC approved device. Don't worry about your property or possessions. Simply listen in.

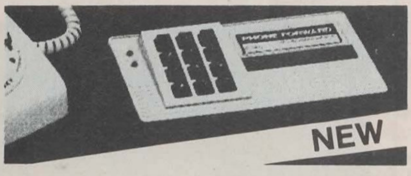
The "Listener" E33,813 $337.50



ELECTRONIC STETHOSCOPE LETS YOU HEAR SOUNDS INSIDE ANY ENCLOSED PLACE

Produces hearing power so clear you can check the workings of a running engine, locate squeaks in your car, the location of plumbing (once water is turned on), or find a rodent trapped within your walls. Just put the suction cup on engine, wall, etc. and listen thru the stethoscope. Highly sensitive audio amplifier picks up any noise or movement. Can be attached to a recorder. Uses one 1.5V battery (not included).

Electronic Stethoscope C61,223 $195.50



Don't miss important calls. Forward them to wherever you want...and you don't have to pay a monthly service charge! Phone Forward provides the same service you can rent from your local phone company...without a monthly charge. It will automatically forward your incoming telephone calls to any pre-designated number that you choose. Just program the number where the calls are to be forwarded. No more missed calls because you are away from home...plus protection from burglaries. Includes AC adapter 1¾″ x 4¼″ x 7½″. Easy to install, but you need two phone lines. E34,523 $286.50

SCRAMBLE IMPORTANT CONFERENCE CALLS

Code phone scrambles normal speech into unintelligible gibberish by interchanging the high and low tones before transmission over telephone lines. Similar receiving instrument converts the gibberish into speech for the desired listener. Adjustable to accommodate various size handsets. Each party needs a unit. Operates on one 9V battery.

Telephone Scrambler E33,579 $995.00

RECORD
LISTEN
TELE-RECORDER 150
A
B

KEEP A RECORD OF YOUR IMPORTANT CALLS

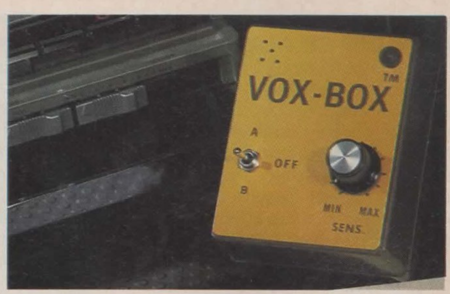
Tele-Recorder works with a regular cassette recorder and is automatically activated when the receiver of your phone is picked up. Connects with remote input. No batteries required. With modular plug. 2¼″ x 2¼″ x ¾″.

Tele-Recorder C33,086 $29.95

PANASONIC RECORDER

DC operation. Uses 4 "AA" batts. 8½″ × 5½″ × 1½″. Ideal to use with the Tele-Recorder.

Cassette Recorder C33,206 $49.50



THE VOX BOX AUTOMATICALLY TURNS YOUR RECORDER ON OR OFF AT THE SOUND OF YOUR VOICE

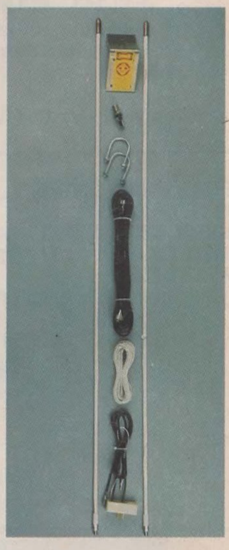
Maximize use of your tapes. With this device they move only when recording. The Vox Box is a voice or sound-activated microphone. A new concept utilizing computer logic chips allows you to convert any common cassette recorder into a sound-activated one. Calibrated sensitivity control allows you to record as close as two inches or as far as 20 feet. 2¼″ x 3″ x 1¼″.

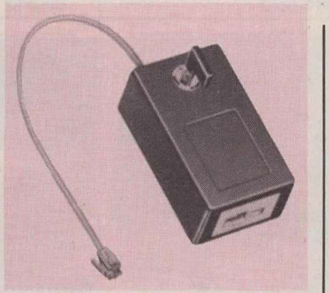
Vox Box C33,053 $62.50

EXPAND THE LISTENING RANGE OF YOUR CORDLESS TELEPHONE WITH THIS ANTENNA

Antenna boosts the listening range for your cordless phone up to 1,200 feet. Installs in a snap. Full size dipole antenna with 56″ elements for extended range. Includes 50 feet of coaxial cable. Won't affect telephone clarity.

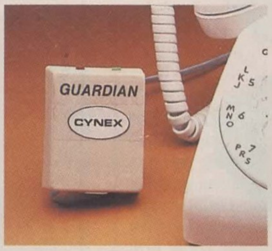
Antenna
E33,737 $134.50





Stop Unauthorized Long Distance Calls On Your Phone. Now you can be sure you're only paying for the long distance calls you want to pay for. With the Toll Guard you need a key to make a long distance call. Without the key, local calls may be dialed but the pre-set Toll card disconnect your line the moment the operator or a long distance access number (1) is dialed. It's tamper proof & can be used with any phone...residential, commercial ...& cordless. 3¼″ x 2-3/8″ x 1¾″. **Toll Card.**

For Rotary or Push Button pulse.) C49,391 $68.50



KEEP YOUR PRIVATE CALLS TRULY PRIVATE

Cynex Guardian guards your telephone line and warns you when someone is listening in. Requires no external power source. Plugs into phone between handset and base or base and wall cord. Flashing red light indicates there is someone on the line. Compact 1″ x 2¼″ x 2¾″ size.

Guardian C49,442 $19.50

CANDLEPOWER SEARCHLIGHT PROJECTS TWO MILES

So powerful it can be used as an aircraft-landing light. A great emergency light. Plugs into auto cigarette lighter (or works off any 12 volt source). It floats. 15′ cord. 10″ x 4¾″ x 5¾″. Black plastic housing and cord. Pistol grip handle. Weighs 3½ lbs.

E33,927 $89.50

YOUR COMPLETE INDEX IS ON PAGE 111

ELECTRONIC MOISTURE METERS

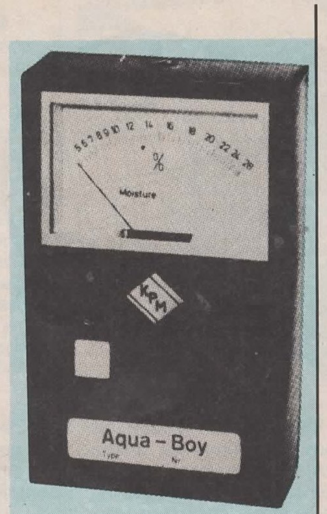
Designed to measure precisely the moisture contents of many materials as per following partial list. Please inquire for other materials not listed.

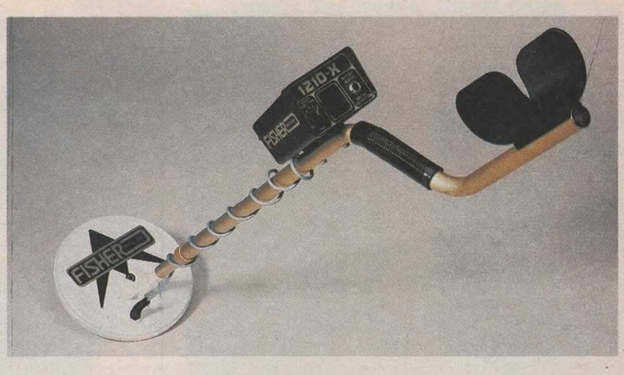
Vanilla
Paper, All Types
Bitumen Felt
Textiles
Feathers
Tobacco
Leather
Shredded Sugar-Beet
Timber, All Species
Construction Materials
Cereals
Corn
Potato Starch
Fish Meal
Cork

This is a sophisticated electronic instrument which gives very accurate readings of moisture content for uses in industry and other commercial applications. It is important that the proper electrode is chosen. Lack of space is prohibiting the complete listing.

Price and availability lists available on request

EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4



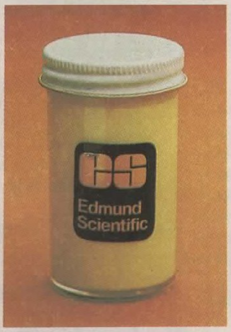


AUTO DIAL METAL DETECTOR FOR TREASURE HUNTERS IN A HURRY

Turn Fisher's 1210X detector on and begin immediately your search for buried treasure. 56″ extended. Weighs 2.8 pounds. 4.1KHz search frequency. 8″ diameter waterproof concentric/coplaner search coil. 5-year warranty. Powered by one nine-volt transistor battery (included).
Fisher Metal Detector E33,976 $369.50

LARGE SAFETY SHIELD GUARDS FACE AND NECK

Designed to meet laboratory standards, this safety face shield wraps around the head to protect the front and sides. Optically clear protective window of 0.60″ polycarbonate.
Safety Shield
C31,719 $21.50

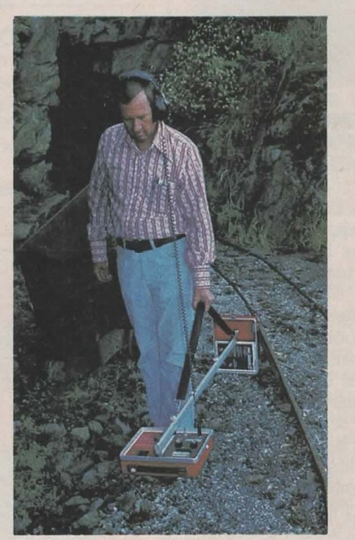


LUMINOUS PAINT GLOWS IN THE DARK

Edmund Scientific offers this amazing craft paint that absorbs and stores light! It's non-toxic and water soluble. Great for safety applications around your home and workplace. 2 oz.
Paint E31,806 $20.75

Etch-O-Matic

ETCH-O-MATIC PERMANENTLY MARKS METAL IN SECONDS. This superb marking system will be invaluable in your workshop or factory. Now you can permanently identify all tools, instruments, equipment or metal lables; marks any thickness, from thin metal foil on up to the largest castings. This kit contains Etch-O-Matic marker (head size 7/8" x 1¾"). cord, ground plate, 2 oz. electrolyte solution, 10 stencils, adapter clip. Kit marks up to 2,000 tools!
Etch-O-Matic
C31,981 $129.50
Stencil Pkg. 100
C49,318 $17.50

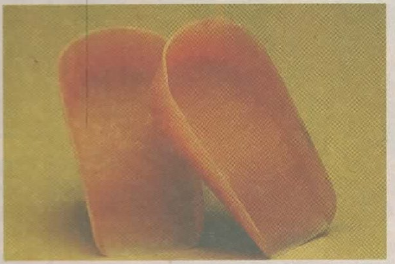


FOR DETECTING METAL OBJECTS UNDERGROUND

Fisher's Gemini II metal detector is used with great success in locating pipes and underground cables. A quick sweep is all you need to determine if it is safe to dig. Also ideal for treasure hunting of all sorts, from discovering buried coins to metallic and non-metallic ores. Works on transmit-receive principle. Consists of receiver, transmitter, connecting handle, ground plate and carrying case. Includes sensitivity and power on/off controls, battery check meter, three position mode switch and ground plate jack. Manual balance control tuning. 82 kHz. transmitter. 51″ assembled. Weighs 11 pounds. Red and black. Requires two 9V batteries.
Gemini II C80,202 $795.00
Stereo Headphones. Reduce background noise, enabling you to hear the slightest instrument responses. Adjustable. With standard ¼″ stereo plug. C34,790 $34.50

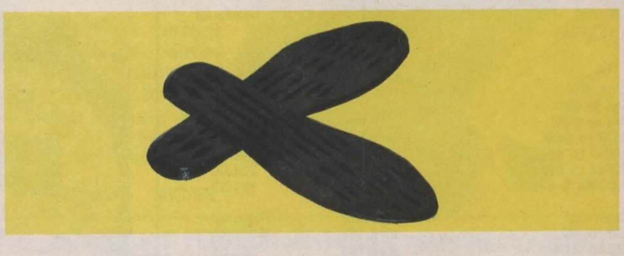
GUARD AGAINST EAR DAMAGE

This kit offers four different noise mufflers that can be worn alone or in combination for greater noise reduction. Includes a set of lightweight ear muffs, two sets of scientifically designed ear plugs and six ear insert cushions.
Hearing Protection Kit
C31,706 $34.50



SHOCK ABSORBING HEELS

Podiatrist-designed heels put an end to the smashing & crashing that feet are subjected to. Reduces discomfort & potential for injury. Wt. 1.4oz. Fit most shoes.
$27.50/pair
Small (Women 4-6 or children) F33,426
Medium (Women 6-10 or Men 4-8) F33,427
Large (Men 8-15) F33,428



SORBOTHANE SHOE INSERTS ABSORB THE SHOCK—INSTEAD OF YOUR FEET

Polymer shoe inserts absorb up to 60 percent of the damaging 4G to 14G shock waves your feet endure while walking, working, jogging or running. Washable inserts protect your feet like no ordinary shoe padding material can. Will last the life of the shoe. Will not promote bacteria. **$29.50 a pair.**
Women's 6-7 **C34,621** Women's 7½-8½ **C34,622** Women's 9-10/Men's 6½-7½ **C34,623** Men's 8-9 **C,34624** Men's 9½-10½ **C34,625** Men's 11-12 **C34,628**
40% thicker inserts. For extra support. **$29.50 a pair.**
Women's 6-7 **C31,663;** Women's 7½-8½ **C31,664;** Men's 8½-9 **C31,665** Men's 9½-10½ **C31,666** Men's 11-12 **C31,667**

BUY OR SELL
ART DURELL
REALTOR
CALL 933-
Fitzwilly's
POP-IN
Haatt's
THSKELLER
EMERGENCY
TORK
LIGHTING

PUT YOUR LOGO ON THE MOST UNIQUE PREMIUM AROUND—CUSTOMIZED EDMUND SCIENTIFIC JUMPING DISCS

Put your name at your client's fingertips. Our jumping discs are the ideal snappy promotion that will keep your sales jumping. Discs jump to three feet high. Everyone who sees one, wants one. Full of fun and surprises. Simply click a jumping disc between your fingers, rub for a second, lay it down on any smooth surfaces ... and POP! It leaps into the air. Friends, clients and customers won't be able to resist tinkering with this fun scientific item. As each disc is used over and over, your sales message is seen again and again. These nickel and stainless steel discs work on the principle of thermodynamics. Heat makes metal expand; cold makes it contract. Rubbing the disc makes it expand. Placing it on a flat surface allows it to contract. Each jumping disc is one inch in diameter and 0.10 inch thick. Prices quoted are FOB. A $49 first time order engraving charge must be added. Send camera ready art. Layout: 3-4" diameter. Final design: 7/8" diameter. We will design your jumping disc for you with a $45.00 service charge. Specify colors. Allow three to four weeks for delivery of first order. Re-orders can be shipped faster. On very large orders, partial shipment will be made in approximately three weeks. Jumping discs are sold only in multiples of 1,000.

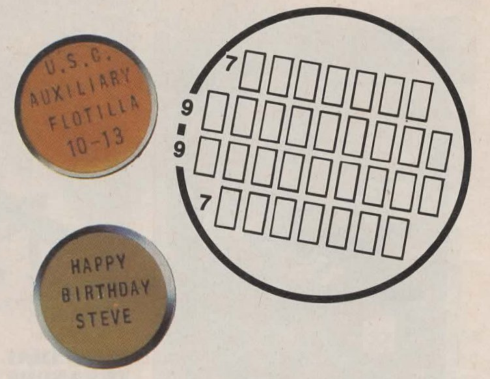
Quantity	One-Color Number	Price/M
1M to 4M	E19,161	$225.50
5M to 24M	E19,164	234.50
25M to 99M	E19,167	223.50
100M to 499M	E19,170	212.50
500M to 999M	E19,173	202.50
1,000M & over	E19,176	191.50

Quantity	Two-Color Number	Price/M
1M to 4M	E19,162	$273.50
5M to 24M	E19,165	236.50
25M to 99M	E19,168	227.50
100M to 499M	E19,171	217.50
500M to 999M	E19,174	206.50
1,000M & over	E19,177	191.50

PHOTO JUMPING DISC

Put your photo or that of someone you know on a jumping disc! Great promotional idea! One or two colors available. First time engraving charge of $49.00. You must specify color and amount (see above chart for quantity prices) and send snapshot.

Photo Jumping Disc **F35,745**
See Quantity Prices Above



CUSTOMIZE YOUR OWN JUMPING DISCS

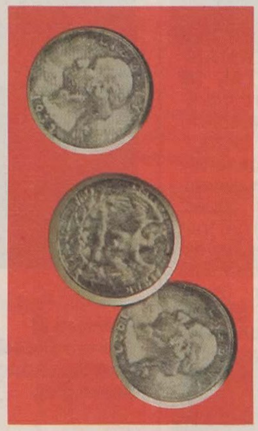
Here's a premium that springs out to attract your customers. Unique personalized greeting for any occasion. Typewriter-style black lettering. Room for message of 7, 9, 9, and 7 characters respectively.

100 or 200 Discs	E29,100	$48.50 per 100
300 or 400 Discs	E29,101	$44.50 per 100
500 and up Discs	E29,102	$38.50 per 100

HALLEY'S COMET JUMPING DISC

Colorful blue, orange and white jumping disc depicts Halley's Comet making its way through the solar system. Just warm our bi-metal disc in your hand, lay it on a cool surface and it jumps three feet every time.

Halley's Comet Disc (pkg. of 12)	E35,542	$9.25
Halley's Comet Disc (pkg. of 100)	E35,543	$43.50



TWO BITS GOES FAR WITH EDMUND QUARTER JUMPING DISCS

Just think of the fun you can have leaving tips that blast off or making wagers with money that flies. Discs jump to three feet. We've included an equal number of heads and tails.

12 Discs	E42,099
100 Discs	E42,278

EDMUND SCIENTIFIC CO.
es
BARRINGTON NEW JERSEY 08007

SPRING INTO ACTION WITH EDMUND SCIENTIFIC JUMPING DISCS

Add new life to your next gathering or seminar. One-inch diameter nickel and stainless steel discs work on principle of thermodynamics. Heat makes metal expand. Cold makes metal contract. We've included complete instructions and rules for 20 games.

12 Jumping Discs	$3.95
100 Jumping Discs	$24.50

YOUR COMPLETE INDEX IS ON PAGE 111

MAKE BUTTONS AND BADGES FOR ALL OCCASIONS

You can make an attractive, long lasting button in about 30 seconds. Each costs just pennies to make. Buttons can be made from almost any thickness paper. Machine accepts most photographs. Cut the button insert to two inches in diameter, place between the dies and press. That's all there is to it! It's a great fundraising idea for any civic group or organization. Durable cast-metal button press (12" x 6") works with just a press of the handle. Comes with four dies—top, ring, crimping and base. Kit includes everything that's needed to make 25 buttons, including metallic base and clear mylar covers. Replacement parts are available.

Bench Press Kit (Press and Pieces to Make 25 Badges) **E80,338 $199.50**

Hand Held Press. Smaller 8" × 6" press. Includes four dies and pieces to make 25 buttons. **E72,542 $159.50**

Accessory Circle Cutter. Retractable razor-sharp blade. **E31,127 $69.50**

Replaceable Circle Cutter Blades (pkg. of 2) **E31,128 $19.50**

Additional Badge Parts, Includes Metallic Base With Pin Backs and Clear Mylar Covers.

100 parts (20 cents per badge)	C71,976	$29.50
250 parts (17 cents per badge)	C72,153	$55.50
500 parts (14 cents per badge)	C72,154	$99.50
1,000 parts (13 cents per badge)	C72,155	$189.50

HERE'S A PREMIUM THAT WILL KEEP YOUR CUSTOMERS HEADING IN THE RIGHT DIRECTIONS

These tiny but highly accurate 16mm compasses make ideal and inexpensive premiums, giveaways and party favors. Your clients will never be steered wrong. This premium will be kept and used frequently. Package of six.

Compasses	E40,468	$5.95
Bag of 30 Compasses	E1306	$26.50

ORDER FROM US DIRECT

Efstonsciene has only one location, and services all orders directly from our Toronto, Ontario premises.

Biofeedback

BIOSONE I PORTABLE ALPHA/THETA MONITOR

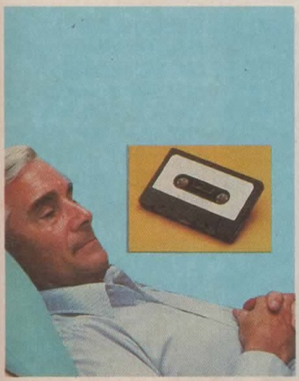
Monitor conditions associated with relaxation, stress, creativity and emotion with this portable instrument. Variable frequency tone indicates type of brainwave produced. Has sensitivity and volume controls, switch-selectable filter, low noise amplifier with 5uV sensitivity and rejection of distracting eye-blink interference, earphone, headband with electrodes, neckstrap, electrode cream and case. Uses one 9V cell (not included). Explore the fascinating and expanding science of biofeedback.
E71,809 $198.50

TEST YOURSELF WITH OUR GSR MONITOR

Measures skin resistance & skin temperature. Provides wide sensitivity range audio and visual feedback. Registers ±1 percent skin resistance change; ±0.2°F skin temperature changes. Variable sensitivity, null balance, polarity reversal and self-test controls. 9½" x 5⅜" x 4¼". Uses 9V cell (not included). With terminals for oscilloscopes and strip chart recorder, earphone, electrodes, electrode cream. Velcro fastener for skin resistance and thermistor electrodes for skin temperature biofeedback.
E72,415 $498.50

MONITOR YOUR BODY'S MUSCLE ACTIVITY

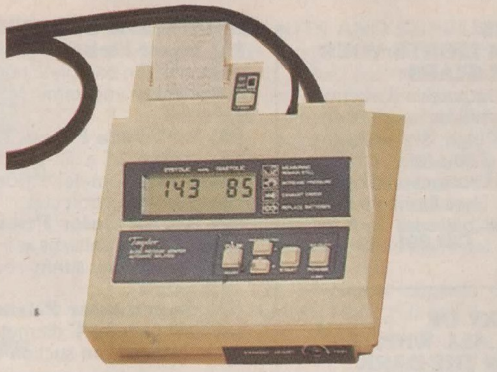
Monitor tension headaches, backaches and other anxiety-related muscular activity far below normal awareness levels. Myosone monitor's integrated circuitry provides accurate discrimination of minute muscular signals and potentials. 1-500uV dynamic range. Proportional EMG and threshold audio feedback modes. Switch-selectable 60Hz line reject filter, 0-10, 0-50, 0-100, 0-500uV calibrated meter ranges, calibrated sensitivity and threshold controls, 18 db/oct. filter. Coupling output. 9¼" x 5⅜" x 4¼". Uses two 9V cells (not included).
E1680 $598.50



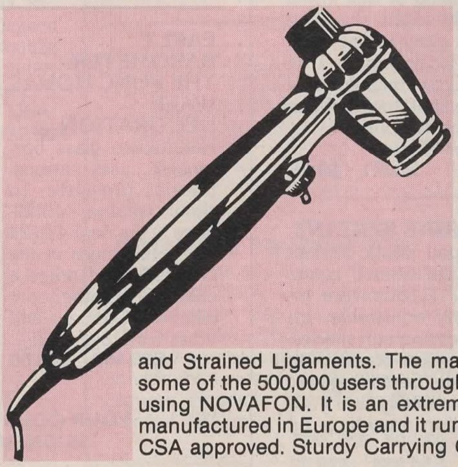
RELAX AND ENJOY ASTRAL SOUNDS

Hour-long cassette of subtly stimulating computer-generated sound waves helps lessen stress and boost energy. Sound waves cause vibration in the ear's small bones, putting listener in a total relaxed state. Successfully used worldwide in hospitals, labs and biofeedback centers.
E31,466 $34.50

Pain Control



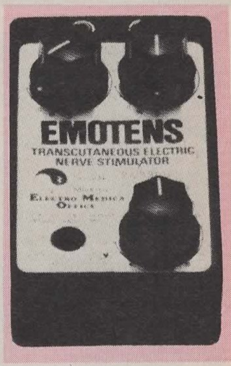
Here's The Newest Digital Blood Pressure Monitor Made...With Printout Plus Automatic Inflation Of The Cuff To Give A Fool-Proof Reading! Place the cuff on your arm...then turn the monitor on. A small pump will automatically inflate the cuff & will stop at the proper position. Gives Systolic & Diastolic readings at the same time. Next, press the print button and get a printed record of your reading with date, hour & minute. Uses 4 "C" batteries (incl.) & has battery checklight. Two rolls of print paper are inclu x 8½" x 5½" x 2¾".
Blood Pressure Monitor W/Printout And Automatic Inflation.
C49,410 $289.50



Novafon for pain relief and maintenance of good health.
A hand held device which is designed to inject sound waves into the suffering area of the body at various frequencies from 2cm to 2 meters wave lengths. This sets even the smallest cells of the body tissue in motion and stimulates the blood circulation. By moving it slowly, using the appropriate accessory head in a circular motion around the affected area you will get relief from pain caused by inflammation, such as Bursitis, Tennis elbow. Tendonities, Periodontosis, Burion, Rheumatism, Wounds, Muscular pain, Nerve Pain, Headaches, Sinuses, and Strained Ligaments. The manufacturer claims that testimonials from some of the 500,000 users throughout the world indicate they found relieve using NOVAFON. It is an extremely well made light weight metal device manufactured in Europe and it runs off a small plug-in 110 volt transformer. CSA approved. Sturdy Carrying Case included.
C49,409 $259.50

EMOTENS FOR PAIN CONTROL

This is an electronic marvel and a spin-off of the advanced developments of diagnostic technology. By applying one or two sets of rubber electrodes on the skin near the suffering part of the body the sensation of pain is gradually alleviated. There are two tuning controls for adjusting the frequency from 1 to 120 Hz, and minute electric current rate from 0 to 40 ma, to comfortable levels. The development of this device is based on the gate control theory of Melzak and Wall, in which the mechanism of pain can be blocked by Transcutanens Electrical Nerve Stimulation (TENS). The use of EMOTENS device can be benficial for arthritis pain, lower back pain, migrains, phantom pains and sports injuries. Caution should be taken when using this device. NOT recommended for Epileptic Patients with cardiac pacemakers, or Advanced heart disease as well as Paraplegics. This is a Canadian made product. Packet size: Dimensions: 4½"x2½"x1¼" (114 mm x 63mm x 32mm). Weight 7½oz. (220 gr.) Two electrodes sets and a 9 volt battery included.
Advanced Model **C49,407 $287.50**



Relief From Arthritis & Muscular Pain Is Just 5 Minutes Away With Infralux.
Infralux's therapeutic infrared heat passes through your skin, moving directly to ease pain by dilating blood vessels, removing accumulated fluids and toxins at a faster rate and soothing irritated nerves. Relieves muscular tension, reduces the inflammation of many conditions such as bursitis, sinusitis, tennis elbow, backaches, sprains & other conditions.
Infralux **D31,988 $49.95**

REDUCE TENSION WITH GSR/TEMP RELAXATION SYSTEM.

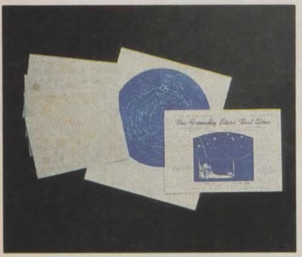
This galvanic skin response and temperature monitor uses solid state electronics to detect and amplify internal body activities that change with your state of mind, muscle tension and emotional level. Once you are able to observe these activities you can teach yourself to gradually modify them. System includes thermistor thermometer for starting temperature, percent response meter, remote electrodes, elastic strap to keep hand in constant contact with unit, 30 minutes cassette, earphone battery, instruction manual and case.

GSR/Temp 2 **C42,637 $119.50**
GSR 2 Only w/o Temperature Monitor **C42,393**

Astronomy

STAR WORLDS PLANETARIUM LIGHTS YOUR CEILING WITH STARS

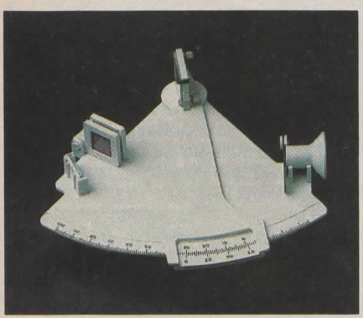
Planetarium only requires a darkened room to provide endless hours of enlightenment. 16½" high, 8½" wide. Includes rotating globe, star charts, lighted pointer and instructional booklet on astronomy. Uses flashlight bulb and two "D" cell batteries (not included). **C31,891 $64.50**



A GALAXY OF STARS...ALL WHICH GLOW IN THE DARK

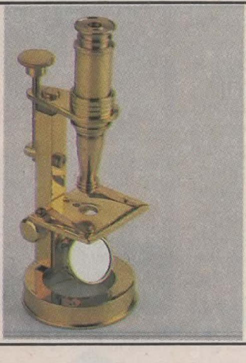
Turn any ceiling or wall into a brilliantly lit night sky with these 250 glow-in-the-dark stars. Star decals vary to 1" in diameter. Glow brightly after exposure to light. Includes star chart and instructions.

Stars That Glow
E9521 $9.25



MARINE SEXTANT

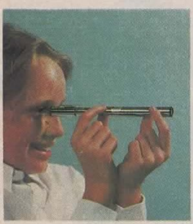
Rugged plastic sextant reads to within 2′ of arc. Full 7′ (178mm) arc. Instantly adjustable. Includes four sun shades. Corrosion-proof. With booklet describing how to accurately find your position anywhere on Earth. **E34,834 $78.50**



ANTIQUE REPRODUCTION MICROSCOPE

Solid Machined Brass Construction
50X Magnification

An attractive solid brass reproduction of an early 19th century German students microscope that's fully functional. 50X magnification. Approximately 7" tall. Weighs a hefty 17 ounces. Perfect presentation gift for medical school students. Microscope can be engraved. **E35,516 $159.50**



EXPLORE THE HEAVENS OR VIEW HIDDEN WORLDS WITH THIS COMBINED MICROSCOPE/ TELESCOPE

Dual function instrument for the budding scientist. Tool is a 30X microscope which converts to an 8X telescope by a simple extension of the tube. 4½" when a microscope. 8" as a telescope. **E41,445 $24.50**

3-D ASTRO-DOME KIT

Astro Dome book converts into a three dimensional model of the night sky that's fast and easy to construct. Simply punch out and paste 20" diameter finished dome. Glows in the dark. Perfect tool for helping one to learn the names and locations of stars and constellations as seen from the Northern Hemisphere. Includes a complete constellation handbook. 8½" × 11 book. **D9661 $18.50**

Science Discovery

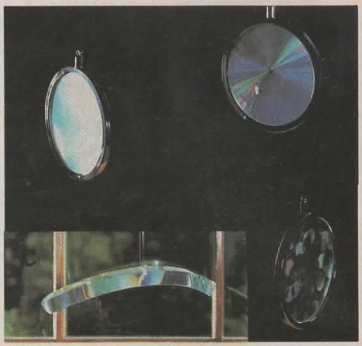
A RAINBOW OF PRISMS

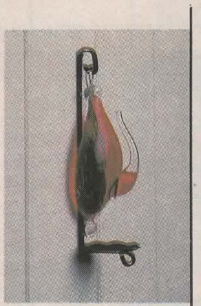
(A) Laser-Etched Axicon Prism. Dapples walls with the complete rainbow. Housed in a 4" diameter chrome frame. Hangs from suction cup. 3/16" thick. **E35,855 $39.50**

(B) Ambrosia Prism. Projects array of spectral sparkles in a 12-point star design. Kinetic surface. 4" diameter chrome frame. 3/16" thick. Hangs from suction cup. **E35,856 $34.50**

(C) Arc Of Color Prism. 15" acrylic curved prism changes patterns as it rotates. Handcrafted. Hang one in any sunny room. **D72,393 $19.50**

(D) Spectrastar Prism. Projects color in a starburst pattern. 4" diameter chrome frame. 3/16" thick. Hangs from suction cup. **D35,857 $24.50**

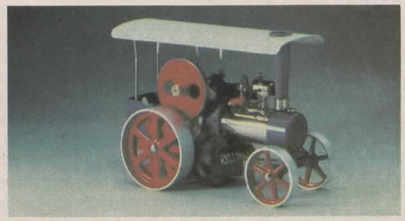




EARLY BAROMETER: THE FUNCTIONAL WALL DECORATION

Handblown glass barometer uses atmospheric pressure to show weather conditions in the next 4 to 24 hours. Changes in the colored liquid notes a change in weather conditions. Copper and brass trim. 8½" X 2¼". **E35,490 $49.50**

YOUR COMPLETE INDEX IS ON PAGE 111



REDISCOVER STEAM POWER

A power source of yesteryear fuels these unique toys. Sturdy metal construction. European imports are powered by a little water, oil and a dry fuel pellet.

Steam Powered Tractor. 10" long. **C72,138 $99.95**

Steam Engine Platform **C72,202 $59.50**

20 Fuel Pellets **C42,324 $ 4.50**

adams'
CHEST OF Magic
14 Great Magic Tricks
102 MAGIC TRICKS!

IT'S MAGIC

Chest of Magic contains 14 great magic tricks for magicians ages 8 and up. Produce water from an "empty" jug, show how money vanishes, penetrate a solid, defy gravity, and more. Chest includes the necessary props for each trick as well as clear-to-understand instructions on how to execute each one. Besides all these great tricks, chest includes a magic wand and a book explaining 102 additional tricks.

Magic Chest C33,722 $24.95

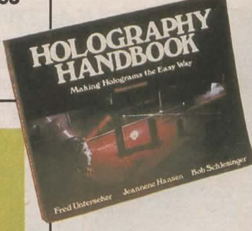
HOLOGRAM PENDANTS

Three-dimensional hologram image is reproduced in dichromatic gelatin. Glass covered. Large 1¾" diameter pendants with 24" chain. Chain and bezel are 22K gold plated. **$21.50 each.**

Watch Face F30,781; Tut F31,223; Eye F31,225; Rose F42,521; Human F35,859; Triangles F35,860; Skull with Diamond F35,861

BLINKING EYE HOLOGRAM GLASSES

Set inside regular eyeglass frames are two holograms depicting blinking eyes. Mesmerize friends and associates. Novelty item which has scientific principles behind it. **C35,862 $47.50**



HOLOGRAPHY HANDBOOK

Easy to follow paperback instructional book describes how to make holograms. Dedicated to the amateur scientist and home hobbyist. **C9669 $28.95**

CHAMBERED NAUTILUS HOLOGRAM

3½" x 5" hologram is enclosed in a 5′ x 7″ gold-trimmed and lucite frame. Different lights produce different dimensional effects and colors. Stunning and unique.

Chambered Nautilus
C42,945 $49.50

Tools & Maintenance

SIERRA SAW
Never needs sharpening

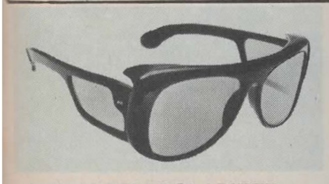
The ultimate saw for every outdoors person. Compact, light, incredibly sharp - described by one bowhunter as the best saw I've used in 20 years.

Features include: Tempered steel blade; Flexible - won't bend or break; Hard chrome plated; Resists rusting; Unique patented cutting edge; Knife edge sharp; Cuts smooth and clean; Blade locks open; Folds into handle; Safe and easy to carry; Unbreakable handle; Weighs only 5½ oz./155 g.; Bl;ade length 7"/18 cm; Overall length 16"/40 cm; Length closed 9½"/24 cm. The Sierra Saw comes with a Limited Warranty against breakage and in normal use against ever needing sharpening.

Highly versatile, it is ideal for cutting firewood, trimming branches at camp or around home, cutting plastic pipe, plywood or wallboard, and for dressing large game. **C49.747 $18.50**

DISPENSING BINS END STORAGE WOES
Wall-mounted bins store and pour dry bulk material. Heavy gauge polyethylene keeps moisture and bugs out. Perfect organizer. Store pet foods, soaps, fertilizer, more. With dispensing cup and mounting screws.

Big Bin. 16" × 10" × 25".
E33, 174 $52.50
E33,174A 2 for $99.50
Lil' Bin. 13" × 8½" × 18".
Translucent. **E34,546 $44.50**
E34,546A 2 for $79.50



SPORTVIEW POLARIZED FISHING GLASSES
Polarized blue-gray ground and polished, hardened glass lenses reduce reflected glare and provide a clear view below the water surface. High impact black frames, designed for all day wearing comfort, feature side temple "light ports" to enhance peripheral vision. Contoured frame provides a browshade fitting close to the forehead to block out overhead sun. Nylon stretch safety strap attached to the temples prevents loss of glasses in action environment.
Fishing Glasses C49,560 $32.50

METRO
DATA-VAC

VAC AWAY COMPUTER DOWNTIME
DataVac gobbles up dust from disc drives which shuts computers down. Steel body. 19" flexible hose; crevice tool; air pin pointer; soft bristle brush; shoulder strap; 5 bags. 2-tone beige. Made in USA.
E34,330 $132.50

PEST ELIMINATOR
Palm-size, delivers 122dB of complex sound pressure to drive away unwanted pests. Draws only 20 milliamps of current. Operates off AC adapter (included) or 9V cell (not included). High/low pitch selection. About size of portable radio. Place in closets, hallways, campers. Drives away pests safely.
C33,610 $68.50

FISHING BAROMETER
BAROMETRE DE PECHE
Taylor

FISHING BAROMETER
Fish are greatly affected by barometric pressure which constantly fluctuates during the day. There is a scientific way to find what fishing conditions to expect!! This particular instrument has four color codes which will indicate to you with fair accuracy how the fish will bite. Yellow for Good; Green for Slow; Blue for Poor; and White for "Turn Around And Go Home" the fishing barometer will also predict the weather maybe better than the weatherforecasters! Metal Case 3½" diameter.
C49,461 $29.50

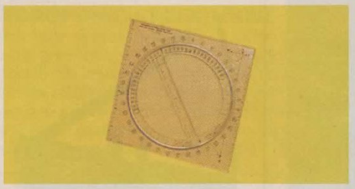
Art Supplies

AIR BRUSH KITS AND SUPPLIES
Regular Kit. Single action external mix needle operated brush. 3 fluid assemblies. Bottom feed brush will accept ¾ ounce and 2 oz. jars and ¼ oz. color cup. 6' vinyl hose; 2 oz. jar with cover; ¾ oz. jar; ¼ oz. color cup; propel regulator; and head wrench. **E34,801 $79.50**

Deluxe. Single action IL internal mix brush. Needle adjustment screw adjusts flow. With ¾ oz. jar; protective cap; 2 oz. jar with cover; 6' vinyl air hose; propel regulator; propel can; head wrench. **E34,802 $109.50**

Paint Kit. 1 oz. jar each of magenta, yellow, blue, green, brown, black and white.
E34,877 $33.50

Air-Brush Set



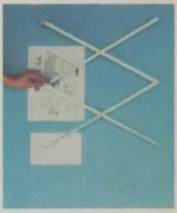
ROTANGLE PROTRACTOR
Read & draw any angle, measure any tangent or slope. Dial inner rotor for desired angle. Use rotated axis as line drawing guide. 360° scale numbered to read compass directions. Inch and metric markings on outer edges of 7" square. Readings accurate to 5 minutes of ARC or 0.1°.
D35,866 $29.50

EXPANDABLE TUBE PROTECTS BLUEPRINTS
Heavy-duty blue plastic tube expands from 26" to 40" in 2" increments. 3" diameter. Protects valuable documents. Store fishing rods or kites.
E34,320
$16.50

STUDENT DRAWING SET
Give that mechanically inclined student the proper tools which may lead to a rewarding career as a draftsman or designer. German-made 10 piece set of precision tools in self-contained case. **C35,133 $24.50**

BEGINNER'S DRAWING SET
Same German quality as above with five pieces of mechanical drawing and design tools. Self-contained case.
E35,134 $19.95

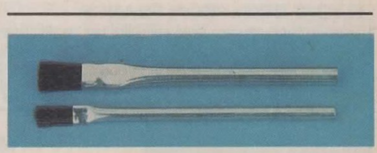
PANTOGRAPH
Reduces or enlarges drawings in 25 ratios from 1½ to 8 times. 2" x 2¾" x 22". Makes accurate design or pattern copies.
E34,317
$44.50



PLOT & PLAN
Smooth vinyl Flexible Curve bends to your desired shape. 18" x 5⁄16". Raised ledge prevents ink from running under curve.
C31,983
$9.50

GIVE IT YOUR STAMP
Create custom stamps. Kit includes 180 characters, 1, 2 and 3 line stamps and rods for stringing type. Rubber.
E35,132
$43.50

THE GLUE KIT
11 glues in one kit. Includes contact glue, woodglue, panel adhesive, epoxy, clear glue, model glue, 2-sided tape, more.
E35,161
$42.50



DISPOSABLE BRUSHES
Quality horsehair. Deliver even spread of glue, paint and fluids. 5¾" metal handles. ¼" width. Can be reused. Packages of 50.

Acid Brushes	**C35,236A $5.95**
Fluid Brushes	**C35,242A $6.95**

YOUR COMPLETE INDEX
IS ON PAGE 111

Air Toys

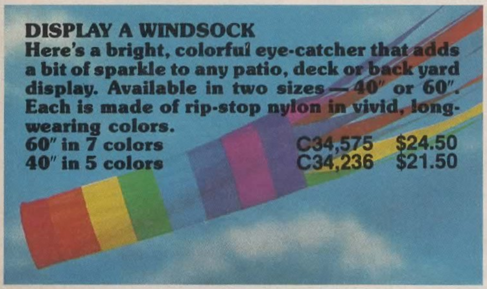
PARAFOIL KITE SOARS IN ALMOST ANY BREEZE

Engineered for more stable flight and a lighter pull. No sticks here, just heavy-duty but lightweight spinnaker cloth. Unbreakable! It will take off in only 3-4 mph winds. 2½′ × 3′ when extended. With storage pouch. Multi-colored.

Sutton Parafoil Kite C31,190 $79.50

Small Scale Parafoil. Multi-colored np stop nylon kite in a smaller scale. 24" x 30" when extended. Also designed to fly in slight breezes.

Small Parafoil C35,842 $19.50



DISPLAY A WINDSOCK

Here's a bright, colorful eye-catcher that adds a bit of sparkle to any patio, deck or back yard display. Available in two sizes — 40" or 60". Each is made of rip-stop nylon in vivid, long-wearing colors.

60" in 7 colors C34,575 $24.50

40" in 5 colors C34,236 $21.50

SIMPLY AMAZING PARACHUTE SKY ROCKET

A 13″ diameter plastic parachute pops out of this 5½″ rocket in mid-flight. Red and white. Fun air toy for children ages 8 and up. Blast off!

E42,316 $11.95

E42,316A 2 for $19.50

AIR TOYS

Six piece assortment includes a floating Space Ball, Launch Pad with helicopter, Flutterbye propeller kites, Rocket Balloons, whistling Balloon-o-copter and a Space Shuttle which blasts into the sky using air and water.

C35,843 $19.95

SPACE SHUTTLE BOOSTER ROCKET

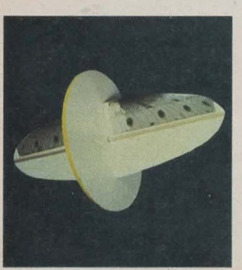
Using air and water booster rocket & Space Shuttle blast off together. At flight's peak, shuttle separates from rocket and returns to Earth.

C35,844 $18.50

FLYING BIRD FROM FRANCE

Suncatching mylar bird will fly up to 40 feet high and a distance of 150 feet. 16″ wingspan. Polypropylene with rubber beak. Powered by twist motion of rubber band.

C42,720 $8.50

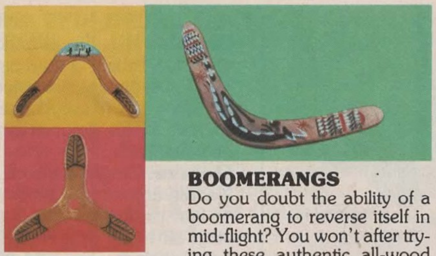


A UFO INVASION?

Our Invader Turbo Kite makes a cosmic whirring sound when rotating at a high speed. 24″ wingspan with a 14″ stabilizing saucer. Kite climbs, darts and dives.

C72,418 $7.95

Science Discovery

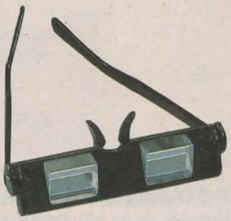


BOOMERANGS

Do you doubt the ability of a boomerang to reverse itself in mid-flight? You won't after trying these authentic all-wood models. **A) 15" long,**can be painted.

C35,845B 2 for $11.95

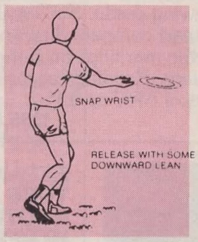
B) Omega Shape. Handcrafted mahogany. 35 yard range. 15″ long. C35,846 $29.50 **C) Zoom-O-Rang.** Three-sided handcrafted mahogany. 11″ between points. C35,847 $19.95



BED SPECS REDUCE EYE STRAIN

Lie back in bed and comfortably read a book or watch TV with these ingenious glasses. Precision aligned ophthalmic crown glass prisms show half a page of average size book. Permits use of corrective glasses. Weigh about 5.4 ounces. With vinyl case.

C61,039 $57.50

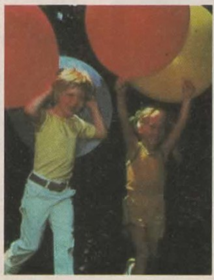

SNAP WRIST
RELEASE WITH SOME DOWNWARD LEAN

AROBIE

The great flying ring which broke all records. The Guiness Book of records has recorded throwing distance up to 1125 ft. You Can Do It Too!

Lots of fun and skill development by any inexperienced, much more of course, for the pro.

C49,745 $22.50

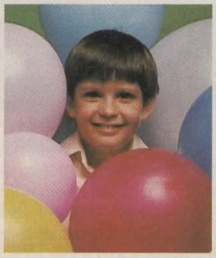


GIANT BALLOONS FOR PLAY OR PARTIES

These four fat balloons in crayon colors of red, orange, yellow and blue will put a twinkle in any child's eye. Inflate to 40″ in diameter.

C71,184 $9.50

C71,184A 10 for $21.50



BALLOONS GALORE!

Perk up a party or a rainy day with brightly colored 10″ diameter balloons. You get 100 balloons in child-pleasing colors of red, orange, yellow and blue. Stock up now.

C42,176 $14.50

C42,176A

200 for $24.50

HELIUM

Refillable balloon blower. Refill tank using an adapter or mail to manufacturer. With 100 balloons, 200 ft. curling ribbon.

E35,848 $176.50

Refill Adapter. Transfer from larger tanks.

E35,849 $29.50

Helium. 14 cu. ft. of helium (265 psi). Non-refillable tank.

E80,291 $153.50

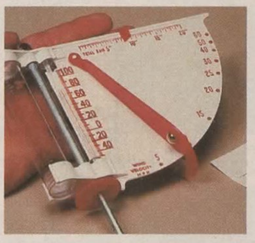
Helium Kit. Helium and 20 3″ mini balloons.

E71,289 $21.50

BALLOON SCULPTURE

Create animals, figures and characters like hawkers at the carnival do. Package includes 50 long balloons, 50 round balloons, metal inflator pump and instructional book.

C35,183A $26.95



WEATHER CHECKER

Inexpensive but practical instrument shows wind speed, registers temperature and records individual and accumulated rainfall for the week, month and year. Sturdy white plastic.

C50,259 $10.95

HOT AIR BALLOON

Not exactly! But it is a beautiful hot air bolloon shaped heavy gauge rubber inside and fabric with colorful stripes and a hanging hand made basket. 18" dia. 36" high. Extremely decorative piece of "art".

C49,744 $16.95 ea.

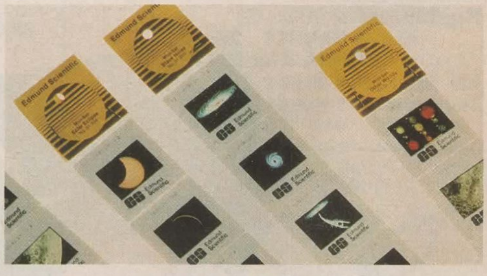
C49,744A .

2 For $27.95

EYE-CATCHING MYLAR BALLOONS

Mylan balloons put a smile on anyone's face. Cheer up a friend, celebrate a happy occasion or give one for about any reason. Silver shimmering balloons are 17″ in diameter. Easily inflated with the helium you supply. Artists can use balloons to create their own one-of-a-kind designs. Package of 10 balloons.

Mylar Balloons C35,248 $14.95



ASTRONOMY SLIDE COLLECTION

slide set of the solar system, including planets, moons, Jupiter as photographed by Voyager I, black holes, stars and solar eclipse in protective plastic sleeve.

E35,850 $29.50

PILOT THE WORLD'S GREATEST FLYING MACHINES

Heavy-duty, die-cast metal planes highlight eight famous fighting machines of World War II.

C33,765 $44.50

ORDER BY PHONE
416-787-4581

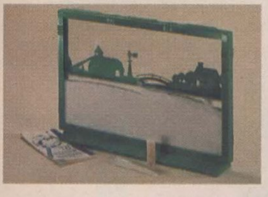
ULTIMATE BALLOONS

Giant weather balloons for backyard or pool fun, classroom parties, lab experiments.

Two 3 foot balloons
E41,755 $34.50

One 8 foot balloon.
E60,568 $27.50

One 16 foot balloon.
E72,151 $109.50



A SOCIETY OF ANTS ALL WORKING ON THE FARM

View an ant colony at work with this all-time favorite. Large ant farm kit includes an unbreakable 10″ x 15″ plastic case, stand and certificate for your own shipment of ants. Watch these hardworking insects sow, reap and store food.

Ant Farm E70,295 $41.50

TAKE A TRIP INTO TIME

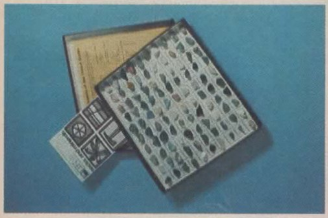
True-scale replicas of six dinosaurs: stegosaurus, woolly mammoth, tyrannousaurus, triceratops, brontosaurus and pteranodon. 5″ to 20″. C34,704 $35.50

ROCK POLISHING

Here's a unique and interesting hobby. Everything needed to begin is included, even the rocks. Polishing tumbler has 115V motor and three pound barrel. Also includes jewelry findings. Create one-of-a-kind jewelry, fascinating gifts and more.

Rock Polishing Kit
E80,276 $159.50

YOUR COMPLETE INDEX IS ON PAGE 111



LOTS OF ROCKS

100 specimen rocks and mineral kit from across the U.S. Includes volcanic tuff, satin spar, petrified wood, jade, gold ore. A fine introduction to rock collecting. Kit also includes the 63-page book, "Study Of Rocks and Minerals."
E71,176 $46.50

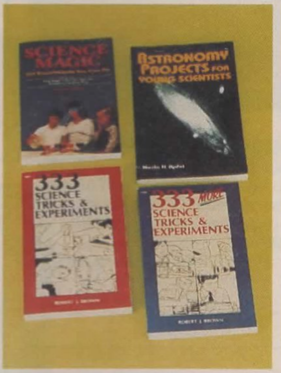
36-Specimen Set. Includes rocks and mineral handbook described above.
E40,329 $26.50

15-Piece Fluorescent Mineral Set. Specimens from across the U.S. and Canada. E71,802 $35.95

GIANT DINOSAURS

These giant creatures can dominate your schoolyard or play area with about 30 minutes of assembly. Heavy-pressed, double-wall corrugated board pieces. Brontosaurus is about 11′ long ad 3′ tall; Tyrannosaurus Rex is 6′ tall and 5′ long. $109.50 ea.

Brontosaurus F31,222
Tyrannosaurus F31,221



SCIENCE MAGIC
ASTRONOMY PROJECTS FOR YOUNG SCIENTISTS
333 SCIENCE TRICKS & EXPERIMENTS
333 MORE SCIENCE TRICKS & EXPERIMENTS

SCIENCE BOOKS

333 Science Tricks and Experiments. 208 pages. Paperbound. Elementary and high school targeted. C9703 $17.50

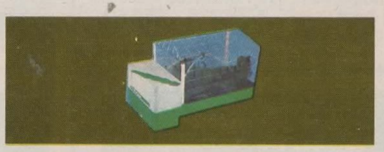
333 More Science Tricks and Experiments. Covers wide scientific range. 208 pages. Paperbound. C35,838 $17.50

Science Magic. 101 mystifying tricks you can learn. Paperbound. E9672 $19.50

Astronomy Projects For Young Scientists. Prepare for Halley's Comet, build a telescope and more. 128-page guide. Paperback. E9699 $14.50

THE CLOCK IDEA OF THE YEAR

Quartz clock is powered by potatoes, fruit, plants, even beer. Strange, but true. Connect wires to power source, and digital clock starts keeping perfect time. E34,357 $29.50



HYDROPONIC GREENHOUSE

Farm year round in this 19″ x 10½″ x 13½″ plastic greenhouse that does not require soil. Roots thrive in water combined with balanced formula nutrient mix dispersed automatically from gallon-size reservoir. Includes year's supply of food, gardening guide, plant supporters and gardening tool. E33,749 $89.50

INSIDE OUT BODYSUIT

What's inside is out on this bold, full-color bodysuit. Show them what you are really made of. Leotard and tights. For lounging, exercise, dance, anatomy instruction and just plain fun.

$167.50 each
5′ to 5′3″ F35,839
5′4″ to 5′7″ F35,840
5′8″ to 5′11″ F35,841

MAKE YOUR OWN HOT AIR BALLOONS

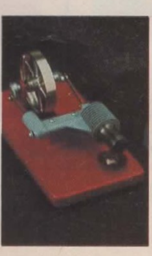
Fully-inflated, these paper balloons can soar to about 200 feet on just hot air. Strong enough to lift anything up to a ½ pound. Can be reused. Includes repair kit and wire for ring and core. Three sizes.

12 foot E31,333 $34.50
9 foot E60,691 $22.50
6 foot balloons E71,866A $16.50

GIANT 4′ MYLAR HOT AIR BALLOON

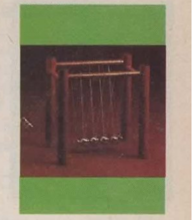
There's no comparison to this giant balloon. This one is 4′ in height when inflated. Pre-assembled balloon. You supply the hot air. Experiment with one. Entertain the neighborhood or class.

Mylar Balloon
E33,095 $34.50



THINKING MAN'S STIRLING ENGINE

You build and power. Precision machined parts and hardware. All metal desk-top model. 7½″ x 4″ kit. Demonstrates motor principles. Interesting desk accessory. E33,775 $69.50



SWINGING WONDER

Swing one of the five nickel balls and one on the other side swings back. 9″ x 7″ x 9″. Demonstrates motion
E33,739 $34.50

GET INTO THE SWING OF THINGS

Swing Thing demonstrates the physics of energy and motion. Easy to assemble friction fit parts. Metal and wood.

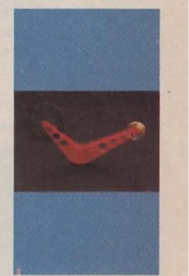
Swing Thing
E42,634 $16.50

OPTIC MIRAGE

Try to touch the 3-dimensional object atop the disc...nothing's there. Place small object inside and mirage appears. Mind-boggling.
E72,381 $98.50

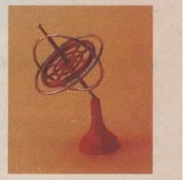
GRAVITY DEFYING SPACE WHEEL

Wheel astounds nearly everyone as it tumbles up and down its tracks, defying gravity and friction. Demonstrates electro magnetics. 1¾″ x 2¾″ x 13½″.
C31,132 $9.95



THE MYSTERIOUS THERMOBILE

Miraculous wire loop generates power like an engine but has no visible power source. The large wheel keeps spinning as long as the small wheel remains heated, thus keeping the wire loop in operation. Plastic and metal.
E33,645 $39.50



WHIRLING GYROSCOPE

6″ x 8″ x 3″ gyroscope illustrates the phenomena which guides astronauts through space as it totters on its plastic base.
C42,712 $14.50

FOSSILS

15 piece collection of specimens ranging from 10 to 500 million years in age. Trace prehistoric life.
E35,837 $34.50

LUMINOUS MOON MAP

27″ x 32″ glow-in-the dark poster clearly indicates and identifies the topographical features of the moon's surface. Great for a budding scientist's or family room.
E31,772 $28.95

THE PUMPING HEART

Life-size anatomically-correct kit details the workings of the human heart. With display stand, information sheet and coloring instructions. Detailed parts. Fun to assemble.
E35,825 $29.95

Experiment With The Magic Of Flight. 100 absorbing experiments. Incl. balsa wood, wire, glue, helium, plastic parts & instr. 13¾" x 23¾" x 3".
Aeronautics Lab
C71,840 $22.95

AEROSPACE CENTRE AEROSPATIAL

SOLAR ENERGY
120 EXPERIMENTS

HARNESS SOLAR POWER

Exciting kit has 120 experiments to educate and delight. Convert sunlight to electricity. Build a solar cooker. Tell time with a sundial. More. With detailed instructions. **C31,325 $54.50**

screen printing craft kit

SILK SCREENING KIT

Create your own masterpiece. Prints on paper, glass, wood, metal, cloth. Decorate T-shirts, posters, ties. Ink pushes through screen to surface. 10" x 14" screen, six inks, brush and instructions.
C71,873 $74.50

Chemistry
250

MASTER THE WORLD OF CHEMISTRY

Expand on your classroom studies with this 250 experiment chemistry set. Detailed instructional booklet provides step-by-step guidelines. Safety tested materials and chemicals. **C80,297 $96.50**

280 EXPERIMENT PHYSICS KIT

Explore optical illusions, electric motor principles, pullies, more. Kit contains over 100 components. With illustrated instructional book. **C72,216 $52.50**

MAGIC ROCKS
watch them grow

MAGIC ROCKS

Brighten any room in less than an hour with an underwater rock formation where every color in the rainbow appears. Kit includes a 4" high clear plastic aquarium with cover. Simply add growing solution and watch your "rocks" grow.
E31323 19.95

GROW CRYSTALS

Choose from 4 colors. **$26.95 each.** Clear (thick) **F35,827;** Clear (thin) **F35,828;** Green **F35,829;** Red **F35,830;** Purple **F35,831.**
One of each kit **E35,832 $104.50**
Four Color Crystal Kits. Produces specimens up to 4 in dia.
E34,365 $57.50

BUMPER STICKERS YOU CREATE

This kit contains speedball acrylic inks, a 4" x 12" plastic frame with screen, blank bumper stickers with adhesive backing and instructions. Have something to say? Say it on a bumper sticker.
E31,910 $28.50

CHEMISTRY FASCINATION

Kit contains all the chemicals and equipment necessary to perform 125 experiments. Safety tested. Gives new life to textbook and classroom studies. With instructional booklet.
E72,503 $73.50

COMPUTER LOGIC LAB

CAN YOU SPEAK COMPUTER BASIC?

Computer Logic Lab is an introduction to the ABC's of how and why a computer works. Perform over 50 experiments. State of the art console has central processing unit, LED indicators and control keys. Experiment on the operation of an LED, logic functions, the buffer, computer games and more. Safe, solderless assembly. Prewired circuitry. Easy to follow instruction manual. Launch yourself into a career in computer technology. Requires three "AA" cell batteries (not included). 16¼" x 13¼" x 2½". For ages 10 and up. **E35,826 $99.50**

QUAD LAB

Probe and explore the four basic science areas—geology, chemistry, biology and microscopy—with this complete kit. Includes 50X and 100X microscope, 6 chemicals, frog specimen, jolly balance, test tube rack, rock and mineral specimens, lab apparatus and manual.
E33,754 $54.95

ELECTRO-TECH KIT

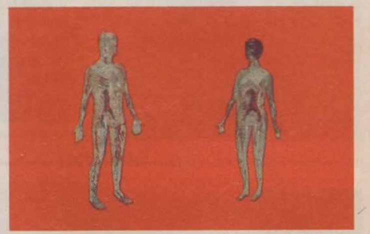
140 project kit is an exciting study of the practical uses of electricity. With the lab-style metal console you can build a strobe light, burglar alarm, telex-punch tape decoder, electroscope, galvanometer and more. Requires three "C" batteries (not incl.). 16¼" x 13¼" x 2½". With instructional manual. **E35,833 $66.50**

MAKE YOUR OWN PERFUME

Create your own special essence in five easy steps. Kit shows you how. You supply the raw material (roses, lime, etc.), lard and undenatured ethyl alcohol in our mini-still.
E71,684 $49.50

REV IT UP! V-8 ENGINE DEMO KIT

Build a working V-8 demonstrator engine. An electric motor operates the engine, spark plugs light up, crank shaft rotates, rods and pistons move. Rubber fan belts. Battery powered. Fun to assemble kit. **C70,448 $69.50**



THE VISIBLE MAN AND WOMAN

Fun to assemble kits display the inner workings and various body cells, organs and parts of the male and female species. Clear plastic body shows internal detail. Visible Man is 16" tall. The Visible Woman is 15½" tall and also includes the parts to demonstrate a seventh-month pregnancy. Assemble with common model kit glue.

	$28.50 each.
Visible Man	**C70,228**
Visible Woman	**C70,283**

Human Skull

HUMAN SKULL

Life-size anatomically-correct plastic model kit. Movable jaw. Sturdy stand. Detailed parts. With information sheet and coloring instructions. Easy to assemble. Simple science fair project. Ideal demonstration model.
Human Skull Model Kit
C35,834 $17.50

YOUR OWN MUSHROOM FARM

Grow a bumper crop of delicious mushrooms at home. Add water and watch them grow right in the box. First crop is ready for "harvesting" in 30 days. Grows several crops over a three month period. 15" x 10½" x 7¼". **E71,899 $34.50**

ELECTROLAB!

3-IN-1 ELECTROLAB

Help young minds unravel the mysteries of electricity as they build a working motor with a motorboat, a crystal radio and a bell-buzzer. Entertains for hours. No soldering or tools needed. Batteries not included.
C35,290 $31.50

YOUR COMPLETE INDEX IS ON PAGE 111

LEARN ANATOMY BY COLORING

Here's the fun way to learn about the body and its complex system. 142 page softbound book entertains while educating. Set includes 30 markers.

Anatomy Coloring Book C31,239 $22.50

THE FACTS OF LIFE

BIRDS AND BEES EXPLAINED

Clear, straightforward book details the facts of reproduction. Six movable, double spread, three-dimensional models explore the reproductive system, fertilization and fetus growth. For all family members. Full color illustrations. Superb reference source.

The Facts Of Life F9674 $24.95

THE HUMAN BODY

KNOW YOUR BODY

Hardbound, well documented and researched book includes a series of three-dimensional movable illustrations which show the body's inner workings. Scale model illustrations include demonstrating a heart beat and how muscles contract.

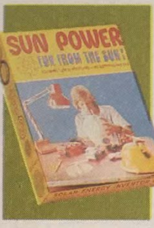
The Human Body E9663 $39.50

ORDER BY PHONE
416-787-4581

WORLD'S FIRST WATCH

Sundial tells sun time, as opposed to mean time. A chart is provided to calculate the difference. 4½" diameter dial. Zinc.

Sundial D33,746 $10.95



SOLAR ENERGY INVENTOR'S KIT

Devise your own solar projects. Kit includes a solar cell, motor, propeller, gears, wheels, axle and wire. Introductory kit for those aged 8 and up.

Inventor's Kit E42,743 $34.50

USE NATURE FOR ENERGY

Solar Oven Kit allows you to boil water, cook food or experiment with solar energy with a 6¾" parabolic reflector. Kit includes support stand, test tube and tube holder. Kit stands 6" high.

Solar Oven C42,427 $14.50

Scientifics plus

SOLAR ELECTRICITY DEMONSTRATOR

Our Scientifics Plus kit teaches solar power techniques. Includes solar panel, motor and propeller. With easy to follow instructions and informative background material.

Scientifics Kit E1231 $24.50

Let The Sun Light Up Your Cigarette!

A unique lighter that concentrates the rays of the sun to create a solar match! Works in any area or temperature. Lights cigarettes in 2 to 6 secs. Plastic case folds easily.

C42,946 $6.95

LIFETIME FLASHLIGHT

Shines forever without costly batteries. Simply squeeze the handle and you have a dependable bright light. Powered by a reliable miniature generator. 5" long. With handy wrist strap. Keep one wherever you need a reliable light.

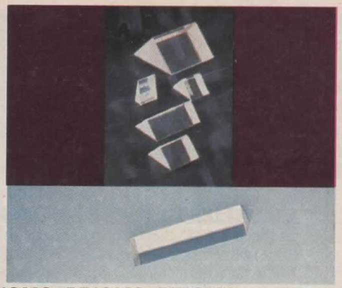
C34,031 $14.95
On Sale $ 9.95

Solar Powered Press-Out Model
WHIRLEY COPTER

WHIRLEY COPTER DRAWS ITS POWER FROM THE SUN

Cut and paste kit of heavy paper stock. Blades move by means of a solar cell (six volts) and motor. Ideal solar demonstrator for inquiring minds.

Whirley Copter C35,187 $14.95



PRISMS, PRISMS, PRISMS

A) Set of Five Plastic Prisms.
Reflect, refract and disperse a rainbow of light in infinite ways. Set includes 1" clear wedge prism; 1½" clear right angle prism; 3" clear discovery prism; 1" experimental prism; and a 2½" experimental prism. Create a rainbow. Show how prisms are used in projectors and binoculars. C34,576 $39.50

B) Equilateral Prism.
School grade prism is 6" (150mm) long with a 1" (25mm) face. Displays a colorful rainbow.
C31,799 $24.50

A RAINBOW OF COLORS ON A 2" x 2" SQUARE

Diffraction gratings have 13,400 grooves per inch. See all the colors of the spectrum. Observe sunlight, the moon and fluorescent lights in a unique way. Bag of 40, each mounted in a 2" x 2" slide holder.

D1307 $9.50

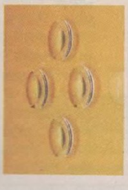
LENS DEMONSTRATION SET

Set of six lenses — double convex, plano convex, double concave, plano concave, concave-convex and convex-concave. Each lens is 1½" (38mm) in diameter with ground edges. E35,891 $44.50

4X POCKET MAGNIFIER

Handy 4X folding pocket magnifier has double convex lens mounted in a plastic frame. 2" square. Simulated leather case.

E40,024 $8.95
E40,024A 2 for $15.50



CAMP LENS

Surplus 2¼" diameter, optical quality glass lens can be used as a basic teaching tool; as a reliable campsite fire starter etc. E35,464 $5.50
E35,464A 4 for $19.50

RAINBOW MAKER 7 x 50 PRISMS

Surplus prisms are the same used in the manufacture of binoculars. Glass. Better than school grade. Nearly all are free of scratches.

E35,836 $16.50

SOLAR SHUTTLE

Exposed to sunlight, shuttle flies to the sky. You control this 10′ x 2′ (when inflated) dirigible by a string. Black. Weighs 2 ounces.

Solar Shuttle C35,864 $4.95
C35,854A 3 for $11.50

RADIOMETERS

Fluorescent-colored vanes reflect light while the black reverse sides absorb it. Reacting atoms cause vanes to rotate. Works from artificial or direct sunlight. 5" high. $19.50 each

Lime E35,179
Strawberry E35,180
Raspberry E35,181
Clear C60,082 $11.95
C60,082A 2 for $19.95

ARTISTRY IN ICE

Icemobile creates ice sculptures. Nitinol wire converts thermal energy into mechanical energy. Force spins the wheel, in turn rotating the wire which carves the ice. Engine is powered by ice itself. D35,865 $57.50

SOLAR ENERGY

LAB KIT LET'S YOU HARNESS THE SUN

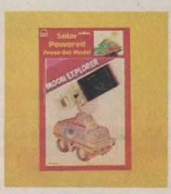
Kit includes 120 experiments to delight and educate. Learn how to convert sunlight to electricity. Includes booklet of directions.

C31,325 $57.50

AIRPLANE FUELED BY SUN

Wooden airplane kit uses solar power to make its propellers operate. Easy to follow instructions. Finished airplane is 9" x 8" x 2". Weighs about 9 ounces.

E35,177 $19.95



SOLAR MOON EXPLORER KIT

Heavy stock paper book that you cut and paste to create a working moon explorer vehicle. Includes six volt solar panel and motor.

C35,186 $16.95

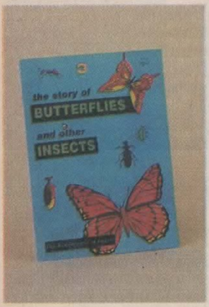
Solar Powered Press-Out Model
MERRY-GO-ROUND

MERRY-GO-ROUND GOES BY SOLAR POWER

Fun-to-assemble cut and paste kit. Heavy stock paper. With six volt solar cell panel and motor. Finished product resembles carnival merry-go-round of yesterday. A unique display item.

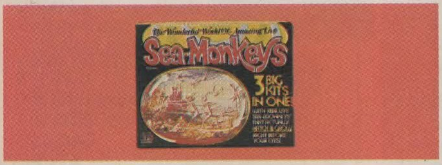
Merry-go-Round C35,184 $26.95

Science Kits



COLLECT BUTTERFLIES

Hardwood collector's kit includes a collapsible butterfly and insect net, relaxing jar and fluid, sponge, mounting frame, identification sheet and actual preserved butterflies and an exotic beetle. 14″ x 10″ x 3½″ kit. Also included is a field collector's book.
E33,753 $43.50



SEA MONKEYS BY THE BUNCH

Hatch and grow these unique aquatic specimens. Kit includes the material necessary to hatch your own bunch of sea monkeys, a year's supply of food and vitamins, a Microvue Zoo with cover and aerating ring and handbook. A longtime favorite of children and the curious.
E35,188 $29.50

FISH EGG HATCHING KIT

Watch the Red Panchax develop from egg to brilliantly-colored fish in 90 minutes. Includes 15 eggs, hatching formula, plastic tank, magnifying glass and eye dropper.
E31,895 $28.50

FROG HATCHERY

Watch a tadpole change into a baby frog you raise. See-thru, glass-like skin lets you see inside frog's body. Playful pet lives in water; needs no land at all. Kit includes everything you need except a lily pad—plexaquarium, underwater landscape, growth food, handbook and Grow-A-Frog coupon. Tadpole is delivered via First Class mail and is guaranteed to grow arms and legs and make its tail disappear.
E35,812 $29.50

MAP AND COMPASS CLINIC

Teaches the basics of map and compass use. Program can be conducted in about two hours. Includes 42 35mm slides, cassette and text narration and 50 "How To Find Your Way" pamphlets. For teachers, scouting leaders, civic leaders.
Clinic Kit **E35,276 $105.50**

Super
Sunprint Kit

THE SUN AS YOUR CAMERA

Make photographic prints with the aid of sun and water. Sunprint paper undergoes a chemical change when exposed to light. Prints are made in about five minutes. Includes acrylic sheet, 24 print sheets and instructions. Ideal for the budding photographer.
D33,743 $12.95

VISUALIZE IN THREE DIMENSION

D-sticks are ⅛″ diameter plastic. Fit into 1″ polyethylene joint with 8″ sleeve. Excellent teaching tool. Display and build geometric figures, architectural girders and trusses, towers, etc. 452 piece assortment.

D-Sticks	**E70,211**	**$68.50**
100 24″ sticks	**E60,112**	**$12.50**
6 sleeves	**E60,106**	**$22.50**

OBSTACLE-AVOIDING INFRARED ROBOT

Space Invader robot won't be distracted by an obstacle. It senses walls and other obstructions and automatically turns away. Solid state electronics. Two sets of three legs. Plastic housing. Requires one nine volt and four "AA" cell batteries (not included).
E33,787 $39.50

ROBOT SERVES AT YOUR COMMAND

You program this robot's movements with the touch of the keyboard on its head. Any action can be programmed up to nine times. 7″ x 5¼″. Weighs 1 lb. High impact plastic. Takes one nine volt and three "AA" batteries (not included).
E34,420 $89.50

U.S. AND U.S.S.R. MISSILE DISPLAY

MISSILE ARSENAL

The might of the U.S. and the U.S.S.R. displayed in 1/144 scale, side by side. Display includes the U.S. "Triad" concept—intercontinental, submarine-launched and airborne missiles—and the Soviet Union's latest advances in strategic surface-launched ICBMs and submarine-launched missiles. An awesome display of might that you assemble.
E35,813 $19.95

MAKE YOUR OWN WORKING PAPER CLOCK

A CLOCK MADE OF PAPER

Cut up this heavy stock 40 page book, supply a little glue, three paper clips, nail, string and perseverance and you have a working clock which keeps accurate time and has a real "tick-tock" pendulum movement. You rewind and regulate it. Originally devised in France in the 1930s. **E9687 $18.50**

BOXING ROBOT KIT

Moves forward and back; draws punches, straight and uppercut. Solid-state electronics. Plastic housing. W/remote control unit. Powered by "AA" batteries (not included). Fun to assemble.
E34,549 $49.50

WATER MILL & SQUIRT GUN
LEVERAGE AUTOMATIC CAR
WATER ANEMOMETER
ELECTRIC SEE-SAW
SOLAR COLLECTOR

SCIENCE IN A SUITCASE

Innovative mind-provoking kits in self-storage cases.

Water Anemometer. The power of the wind is harnessed and made to pump water. Also measure wind force.
C35.814 $10.95

Lie Detector! Test your friends truthfulness with this unique kit. Easy and fun. **C49,740 $10.95**

Leverage Automatic Car. Wind-up motor powers car through figure eights, U-turns in zig-zags as determined by you. **C35,816 $10.95**

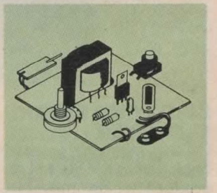
Solar Collector. Harness the power of the sun for experiments. **C35,817 $10.95**

Electric See-Saw. Electrical conduction principles are demonstrated. See electricity in action. **C35,818 $10.95**

All Five Kits **C35,819 $49.50**

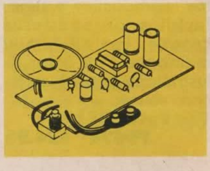
NERVE TESTER KIT

Test your ability to remain calm or your steady-hand state. One circuit indicates failure by turning on an LED; the other gives forth a mild shock. Learn about transformers, LEDs, voltage dividers and silicon-controlled rectifiers.
E35,820 $29.95



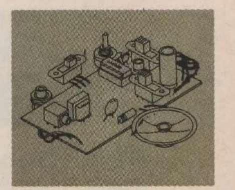
AUTO SIREN KIT

Loud, piercing output sounds like real thing. A burglar alarm or attention getter that teaches about R/C timing circuits, clock circuitry and voltage controlled oscillators.
E35,821 $35.50



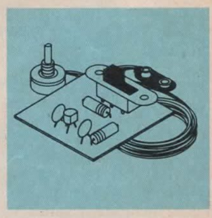
YOU-BUILD INTERCOM

Construct your own 2W intra-house telephone. Kit teaches principles of speakers, microphones, amplifiers, transformers.
E35,822 $43.50



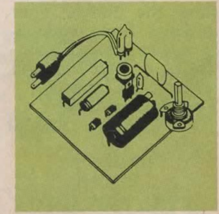
YOU-BUILD METAL DETECTOR

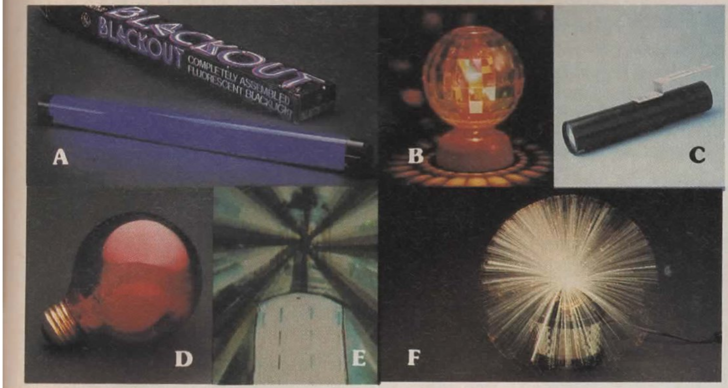
When completed, the detector that you built helps search for the treasure to pay for it. Discover the marvels of radio transmitters, voltage dividers, timing and tuning circuits.
E35,823 $23.50



VARIABLE STROBE LIGHT KIT

White light at a flick of a switch. Flash rate can be varied from 1 or 2 per minute to 12 or more per second. Educates students in xenon flash tubes, voltage doubler circuits, trigger transformers.
E35,824 $49.50





SPECIAL EFFECTS

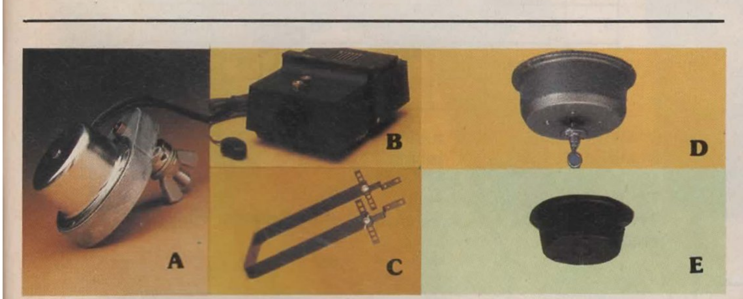
(A) Fluorescent Blacklight Creates Glowing Effects. General Electric's "Blackout" light has a compact design (25″L × 1¾″W × 2″H) for easy-to-do hidden mounting. Quick installation using template and mounting brackets. 33 watts, UL listed. Comes with detachable 6 ft. cord, on/off switch, 2 posters and instructions. Weighs 10 oz. Made to retail for $80. ES special price! **E34,501 $45.50**

(B) Dance Machine. Prismatic lens inside global-shaped party light creates a multicolor image array 9″ tall. Red plastic base. **E33,745 $27.50**

(C) Egg Shape Strobe Light Very powerful, screws in to regular socket 110V **C49,738 $39.50**

(D) Flickering Balafire Bulb. Simulates flames of a roaring fire. **$8.95 each. Red, F33,823; Blue, F34,224; Amber, F34,226.**

(F) Fiber Optic Lamp Delights The Eye. Hundreds of thin cascading fibers transmit light. . . not heat. . . from a single light source in base. Sparkler-like effect. 5″ diameter jeweled base; 9″ lamp. **E33,263 $89.50**



MOTORS

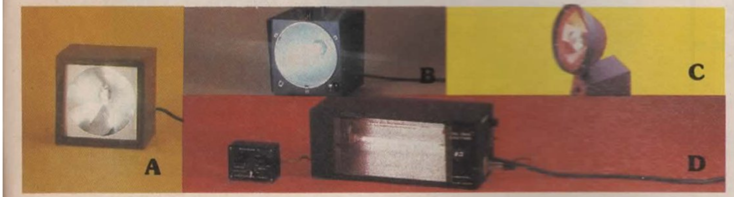
(A) Motors. 120V. Hubs on shafts steady wheels with ¼″ center hold. Wing nut, 6ft. cord and plug. CCW rotation.
12 RPM E60,714 $42.50; 30 RPM E60,763 $47.50: 60 RPM E60,733 $49.50

(B) Professional Model w/remote control switch for lamp; 2 access outlets. **E71,248 $278.50**

(C) Universal Mounting Bracket for ceiling mounting or use with base. **E60,772 $55.25**

(D) 40 lb. Motor for large mirrored balls. Rotates at 2rpm; ring on drive shaft; uses 115VAC; Ht. 5″ **E72,279 $137.50**

(E) 10 lb. Motor revolves at a steady 4 rpm. Black metal case; mounting flange; drive shaft hole; uses 115 VAC; Ht. 2⁹⁄₁₆″. **E60,744 $91.50**



LIGHTS

(A) Party Light Strobe. 50W/sec. Xenon flashtube for over 1 million flashes. 120 VAC. Circular reflector. **C49,145 $82.50**

(B) Blue Box Strobe Light. Wire-in bulb assembly gives 3 to 5 million flashes. External replaceable fuse. 6 ft. grounded cord. 7½″ cube. 120 VAC operation. 4 to 20 flashes/sec. **C71,703 $298.50**

(C) AC Portable Spotlight rotates 170°. 115VAC. 6V bulb and line cord. 4⅞″ × 4½″ × 4⅜″ folded. **E71,010 $138.50**

(D) Super Strobe. 7¾ in. Xenon flashtube illuminates a 60′ × 90′ area. Cooling fan, 10″ × 5″ curved reflector, 50W/sec. per flash max. at 1 to 10 flashes/sec. 120 VAC, 60Hz. input, 15 amps. **C1604 $494.50**

UNIQUE LIGHTING HANDBOOK

Unique Lighting

This easy-to-understand handbook covers many facets of unique lighting. 77 pages, spiralbound, 8½″ × 11″ format. 16 chapters detailing color wheels, color organs, strobes, blacklight, light boxes, slides, overhead projectors, light sculptures and more. Illustrated. Ideal reference source.
Unique Lighting E9100 $11.50

MIRRORED BALLS

Create unique window displays and light shows.
10″ Diameter Ball. Acrylic mirrors. Includes ceiling mounted motor and decorative fixture. Weighs six pounds. **C33,785 $99.50**

8″ Diameter Ball. Heavy-duty ball for dance halls. Glass mirrors. weighs 3 pounds. Without motor. **C85,180**

Motor for 10″ Diameter Mirror Ball
E60,734 $34.50

SEQUENTIAL FLASHER

Free run or audio-synchronized strobe modes. Create a display of color ripples. 5¼″ × 6″ × 2½″. Input power: 117V, 60Hz, 15 amps max. Output power: 1500W max. (500W per channel). Monitor lamps: four (one per control channel; one power on). Load effect: 20 ohms. Audio input jack. **E71,430 $339.50**

THREE CHANNEL SOUND AND LIGHT TRANSLATOR

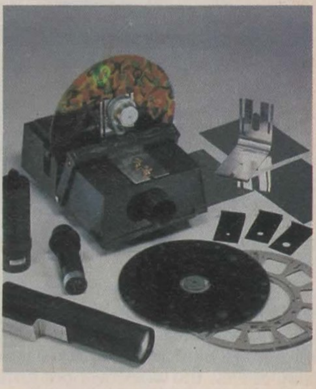
Translates audio output of radio, stereo or tape recorder into three separate frequency channels, each of which will drive separate light displays up to a maximum of 400 watts. 2″ × 4″ × 6″. 6′ wire to connect with audio source. **E43,309 $112.50**

3-CHANNEL CHASER

Features half dim function. 3 modes—straight chase, audio chase & 3 color organ with 3 speeds; 120VAC, 600w/channel, 6ft. cord and ¼″ phone plug. **C31,360 $548.50**

YOUR COMPLETE INDEX
IS ON PAGE 111

PROJECT BRILLIANT MOVING PATTERNS AND MORE WITH OUR MULTI-IMAGE VISUAL EFFECTS KITS



Show starbursts, wispy colored clouds, colliding planets and much more! Both sets include three-way kaleidoscope lens, colored cloud accessory, one rpm motor, colorscopic wheel, colored window wheel, brackets and complete instructions. Standard set includes Edmund Manual Projector (F71,057) **E71,295 $429.50**
Professional Set includes the Edmund Professional Projector (F71,248)
E71,868 $462.50

EDMUND MULTI-IMAGE PROJECTORS

Incl. 500W fan-cooled light source; thermostat, 3″ f.l., f/3.5 anastigmatic projection lens condenser system with heat absorbing lens; 12 slide carrier disc; 3 aperture plates; built-in accessory mounting studs(2).
Manual Projector
E71,057 $198.50

2 Wheel Projector creates "bleemer", Moire and many great effects. Use 9 or 4½″ discs. Attach 4½″ disc to 35mm projector or camera.
E72,071 $469.50

SUNDIAL AND SEXTANT KIT

Plot the position of the sun. Easy to build kit is constructed of plastic and cardboard. With mirror. **E61,204** **$35.50**

Astrolab

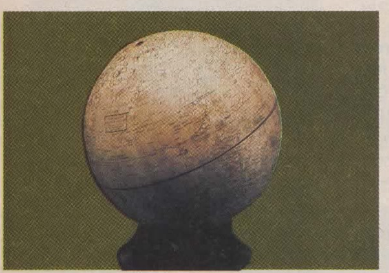
Shows accurate time, date and elevation of celestial bodies. Includes Celestial Sphere which shows poles, equator, equinoxes. **E61,203** **$38.50**

HAVE THE UNIVERSE AT YOUR FINGERTIPS

Astro Disk desk ornament is a silk-screened map of stars, constellations and Milky Way. Line up the day and month and you can see what will appear in the skies that night.

13½" Diameter **C27,237** **$19.50**

9" Dia. Astro Disk **C35,552** **$14.50**



A GLOBAL EXPERIENCE

The Moon is recreated in masterful detail with this official NASA model. 12" diameter globe designates the first American and Russian unmanned landing sites and the first Apollo landing site. Painstaking detail of craters, seas, mountains and plains give this globe a three-dimensional effect. With globe base. Includes the "Story Of The Moon" handbook and 32 informative study projects.

Moon Globe **C80,299** **$47.50**

A GLOBE OF THE HEAVENS IN ALL THEIR GLORY

This 12" diameter blue acrylic globe plots hundreds of stars. Displays the Milky Way, Elliptic Path, deep sky objects and many more. Mounted on a 16" diameter acrylic base. With detailed star guide.

Celestial Globe **C31,935** **$399.50**

TIME
WORLD ATLAS

THE WORLD AT YOUR FINGERTIPS

16" transparent terrestrial political globe has color-keyed nation definitions, latitude and longitude lines. On acrylic base. Stunning accent piece affords you the ability to view the world without turning it like opaque models. **E80,307** **$214.50**

ENJOY A CELESTIAL BANQUET

The Stars Above displays the wonders of the heavens, including Halley's Comet, the latest in star tracking and the Milky Way. Includes first and second magnitude symbols. With booklet and wax pencil for tracking. **E72,527** **$142.50**

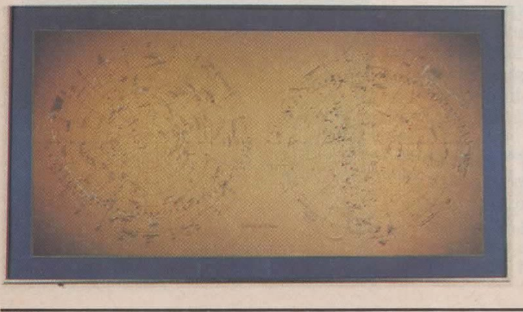
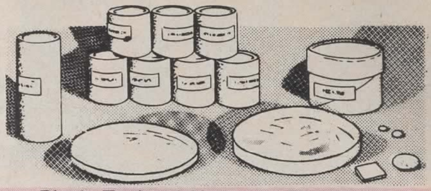


CHART THE CELESTIAL HEAVENS

The starry sky from pole to pole on two adjacent hemispheres is shown in this 16" x 29" work. Bronzed translucent lucite; six colors. Stars are shown in true colors (temperature) and magnitude (brightness). With information booklet. **E35,368** **$194.50**

COMPLETE TELESCOPE MIRROR GRINDING AND POLISHING KITS.



Include Mirror Blank, Tool and Abrasives. The ultimate challenge for the amateur telesceope maker is grinding his own mirror. It requires patience, but pays off in satisfaction and real savings. Each kit contains a mirror blank - recast from Pyrex brand sheet glass which is superior in the following ways: 1) The melting and recasting of the original sheet results in double annealling and fewer and smaller bubbles, if any, in the finished product; 2) Our blanks are molded with uniform thickness, 90° edges (no taper), and two flat, parallel faces. This allows you to choose either side for grinding and to turn the blank over if you damage the first side. Kits also include plate glass tool for grinding, abrassives from coarse to fine jeweler's rouge and tempered burgandy pitch. Detailed directions found in "Homebuilt Telescopes".

Number	Dia. Mirror	Thick	Kit Price
D70,003	4¼"	¾"	87.50
D70,004	6"	1"	124.50
D70,005	8"	1⅜"	169.50
D70,006	10"	1¾"	378.50
D70,007	12½"	2⅛"	595.50

Mirror Blanks of Pyrex Brand No 7740 Sheet Glass				Plate Glass Grinding Tools		
Dia.	Number	Thick	Price	Number	Thick	Price
4½"	D80,016	¾"	40.50	D80,011	⅝"	$ 22.50
6"	D80,017	1"	70.50	D80012	⅝"	31.75
8"	D80,009	1⅜"	110.50	D80,013	¾"	46.75
10"	D80,000	1¾"	235.50	D80,014	⅞"	149.50
12½"	D80,010	2⅛"	415.50	D80,015	1⅛"	219.50

6" Mirror Cell Fits 7-1/8" tubing	**M08,130**	**$65.00**
8" Mirror Cell Fits 9-1/4" tubing	**M08,131**	**$78.50**
10" Mirror Cell Fits 12-3/8" tubing	**M08,132**	**$131.50**
12" Mirror Cell Fits 15" tubing	**M08,133**	**$157.50**

Telescope tubing 4¼", 6, 8, 10, 12½" sizes available - prices on request

Rubber Pitch Lap Mat. Avoid disapponting pitch breakouts when hand cutting channels.

Number	Size	For Mirror	Price
E50,171	13½" x 13½"	8", 10", 12"	$21.50
S60,081	6 x 6	4¼", 6"	9.50

Tempered Burgundy Pitch: For making pitch lap. A real trouble saver because no resin, wax or turpentine need be added. ½ lb. container.

Tempered Pitch No. D40,023 Only **$11.95**

ABRASIVES IN CONVENIENT CONTAINERS FOR MIRROR GRINDING OR INDUSTRIAL USE

Available in grades from coarse to extra fine, these abrasives should be used in the order listed below. Guaranteed to be free from contamination. Weights are approximate.

Number	DESCRIPTION	Quantity	Price
C49,782	No 80 Aluminum Oxide	16 oz.	$12.95
C49,783	No. 120 Aluminum Oxide	6 oz.	6.50
C49,784	No 220 Aluminum Oxide	2 oz.	6.95
C49,785	No. 320 Aluminum Oxide	2 oz.	4.95
C49,786	No. 400 Aluminum Oxide	2 oz.	5.25
C49,787	No. 600 Aluminum Oxide	1 oz.	5.75
D42,554	No. 305 Emery	1 oz.	9.50
C49,240	Red Jewelers Rouge	16 oz	9.95

Clock Drive Motor

115VAC, 3/16 in. dia. by 2¼ in. shaft. Counter-clockwise at 1/15 rpm. Torque: 30 in. per oz. 2"x1-5/16"x2-7/16". **E50,199** **$43.50**

Matching Worm Wheel Set

3 in. dia., 32 pitch, 96 teeth, 7/32 in. face, .375 in. dia. bore. **E30,307** **$69.50**

"Homebuilt Telescopes" by S. Brown

Provides detailed instructions on how to make a reflector mirror accurate to 1/8 wave. Includes instructions on grinding (forming, smoothing and testing the curve), levelling, polishing, telesceope construction and more. 36 pages. Paperbound.

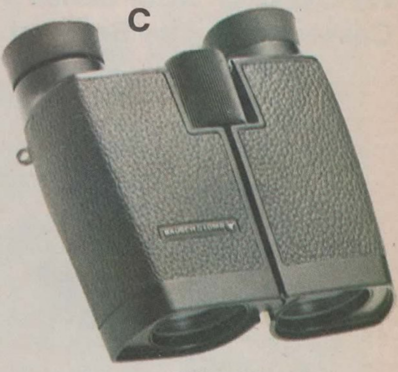
"Homebuilt Telescopes" **No. E9066** **$11.50**

LIFETIME WARRANTY OF PERFORMANCE

BUSHNELL OR BAUSCH & LOMB Binoculars, are warranted to be free of defects in material and workmanship for the lifetime of the original owner. This warranty is an expression of confidence in our products and is your assurance of a lifetime of superb performance and dependable service. This is a selection of binoculars to cover most of the viewing assignments. BUSHNELL AND BAUSCH & LOMB products are the best optical instruments for value considering their optical quality performance and cost, therefore the purchase of any of these binoculars is guaranteed to be a wise financial investment.

BAUSCH & LOMB CLASSIC 7x35

BAUSCH & LOMB DISCOVERER 9x35, WIDE ANGLE



BAUSCH & LOMB DISCOVERER 8x24

SPORTVIEW 8x40, WIDE ANGLE

7x50, WIDE ANGLE

10x50, WIDE ANGLE

ENDORSED BY THE NATIONAL AUDUBON SOCIETY ™

BANNER 8x20, WIDE ANGLE

CUSTOM 8x36, LONG EYE RELIEF

BANNER 7x50, BLACK ARMORED

IDENT. LETTER	DESIG-NATION	MAGNIFI-CATION	LENS SIZE	EXIT PUPIL	FIELD OF VIEW AT 1000FT	FOCUS SYSTEM	PRISM	WEIGHT OZ.	SIZE H x W	GOOD FOR	STOCK NUMBER	PRICE
A	7x35	7X	35mm	5	382'	CENTRE	ROOF	18.6	5x3½	ALL ACTIVITIES	C49,703	$815.50
B	9x35	9X	35mm	3.8	382'	CENTRE	PORRO	23.	5⅜x4	BEST FOR OUTDOORS	C49,704	$432.50
C	8x24	8X	24mm	3	320'	CENTRE	PORRO	16	4⅜x3	SPORTS-THEATRE	C49,705	$349.50
D	8x40	8X	40mm	5	473'	INSTA-FOCUS	ROOF	23	5⅜X4½	TRAVEL-SPORTS	C49,706	$134.50
E	7x50	7X	50mm	7.1	376'	INSTA-FOCUS	PORRO	26	6½x5	STARGAZING	C49,707	$136.50
F	10x50	10X	50mm	5	419'	INSTA-FOCUS	PORRO	38	6⅛x5	HUNTING	C49,708	$239.50
G	8x20	8X	20mm	2.5	430'	INSTA-FOCUS	ROOF	7.3	4x2	INDOOR-SPORTS	C49,709	$179.50
H	8x36	8X	36mm	4.5	341'	CENTER	PORRO	23	4½x4	BIRD WATCHING	C49,710	$283.50
I	7x50	7X	50mm	7.1	394'	INDIVIDUAL	PORRO	37	7x5	BOATING	C49711	$288.50

PROFESSIONAL & LARGE TELESCOPES & ACCESSORIES

The art and science of telescope making and using has advanced tremendously over the last few years, a fact which has pleased many new and seasoned astronomers. It seems however that the ultimum has about reached with the new generation of telescopes made by Meade and Celestron. The following is only a small sample of a few new models.

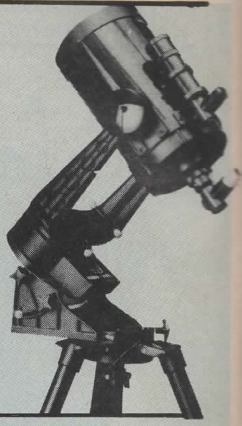
Meade GEM Series 8" and 10" Schmidt-Cassegrains: The Best—at affordable prices.

Authorized Meade Dealer

Meade 8" and 10" GEM models are designed for observers requiring the finest in 8" and 10" Schmidt-Cassegrain optics, but at more affordable pricing levels. Models 2080/GEM and 2120/GEM (with German-type Equatorial Mounts) include the exact same optical tube assemblies as Meade fork-mounted Schmidt-Cassegrains: all of the deep-space and planetary detail visible in the Models 2080 LX3 and 2120 LX3 are, respectively, visible through the 2080/GEM and 2120/GEM as well. If your astronomical interests lie primarily in visual observing with only casual astrophotography of the Moon, planets, and deep-space, Meade GEM models are all that you need. Standard equipment on these models is as follows:

German-type Equatorial Mounts with Dual Worm-Gear Hand Controls
Low Vibration Field Tripods
Series 4000 Super Plossis 26mm Eyepiece
High Transmission (MgF_2) Coatings on the Correcting Plates
Multi-Coated/Silvered Optics Group is available optionally on either model, and increases transmission about 23%.

CELESTRON''S ULTIMATE SCHMIDT-CASSEGRAIN SUPER C8 PLUS



Is the world's most popular modern telescope! One reason for the C8's popularity is that is has enough diameter and focal length for serious deep space observing while being small enough for true portability. Only 17 inches long and weighing a mere 23 lbs. compact with light weight fork mount, it is designed to be a true field instrument. The C8 is capable of 14 magnitute visual and 16 magnitute photographic observation. The Byers 7.54" dia. worm gear drive system is the best available ideal for astro-photographers, the ultimate for observers.

CELESTRON'S GERMAN-EQUATORIAL SCHMIDT-CASSEGRAIN SUPER POLARIS C8

Celestron's famous 8" optical system on the new improved, computer-compatible super polaris mount. Built-in polar alignment telescope, adjustable tripod. Low-cost optional single and jual-axis quartz pulse motor drives. Super value.

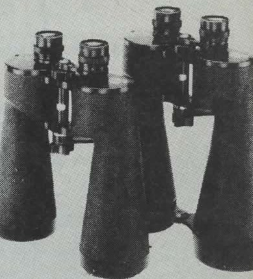
INVESTING IN A GOOD CELESTRON OR MEADE TELESCOPE IS A SERIOUS BUSINESS. We want to help you to decide which instrument best suits your needs. There are however two options, either visit our premises where most of the sizes and accessories are on display. We will go out of our way to explain to you everything we know about telescopes and astronomy and you can decide accordingly or you may send for a set of up-to-date manufacturer's catalogues describing all or most of their products in detail with excellent pictures and many practical technical discussion on optics, performance and accessories requirements for every occasion.

HERE IS OUR OFFER

The Meade 16 page systems catalogue plus the 36 page accessories catalogue, plus the 4 page eyepiece brochure including our up-to-date price list and introductory letter all for $8.00. The Celestron 54 lavish and colorful catalogue plus the 32 page accessories catalogue with our up-to-date price list and our letter also for $8.00. Both sets however will be only $14.00.

A minimum investment for a wise decision.

CELESTRON'S GIANT DEEP-SKY BINOCULARS



Deep-sky giant binoculars are just the right size for viewing nebulas, galaxies, and comets under dark skies. Incredibly wide, bright star fields. Both the 20 x 80 and 11 x 80 models feature fully-coated optics, tripod mounting adapter, deluxe case and straps. Center focus design with best 1 piece body construction. A deluxe model 20 x 80 is also available.

A New World Standard in Professional Optics for the Serious amateur.

In 1984, Meade engineers set out to design the finest eyepieces and Barlow lenses-bar none-ever, made available for modern telescopes.

DESIGN SPECIFICATIONS: Meade Series 4000 eyepieces yeild the widest possible fields of view, consistent with pinpoint edge-of-field sharpness and long eye relief incorporating 7-layer multicoatings, these sophisticated 5- to 8- element designs permit high levels of optical corrections. The polished chromed-brass barrels are threaded for standard filters, and, where practical, eyepieces are parfocal, allowing eyepiece interchangeability without refocusing.

EYEPIECE GROUPS: Eighteen focal lengths in the three Series 4000 eyepiece group permit precisely the right eyepiece for any application.

SUPER PLOSSIS: With 5 optical elements provide a 40% improvement in corrections for chromatic aberration. Best for general observing at moderate cost.

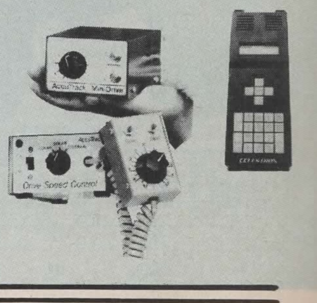
SUPER WIDE ANGLES: These 6-element eyepieces, with their 67° fields, offer exquisite wide-angle images.

ULTRA WIDE ANGLES: The ultimate in modern eyepieces, Meade 8-element Ultra Wide Angles permit extreme image fidelity and sharpness over an amazing 84° apparent field.

SERIES 4000 BARLOW LENSES: The most sophisticated Barlows ever developed for commercial telescopes.

For full details and our price list send $2.00 or take advantage of our offer for a complete set of manufacturers catalogues.

ALL THE LATEST ELECTRONIC CONTROLS



An explosion of sophisticated electronic controls has arrived. Confused? whether you want an advanced computer-compatible system or a simple speed controller, we can help you match your needs with the best products from several manufacturers. Their catalogues explain it all. Please see offer above.

Canadian Authorized Dealers For
MEADE AND CELESTRON
EFSTONSCIENCE INC.
Science & Technology Agora
3350 Dufferin Street
Toronto, Ont. M6A 3A4

ASTROSCAN® 2001 CAPTURES HEAVEN'S WONDERS. THE IDEAL FIRST TELESCOPE FOR THE FAMILY

- **Extra Wide 3° Field, 16X Magnification**

Reach out and explore the night sky. Astroscan® excels when you turn it to deep sky objects like galaxies, nebula and star clusters . . . the pleiades are absolutely breathtaking! Unique award-winning design allows you to cradle it in your arms or it glides smoothly and solidly into its table-top base. Highlights of this scope are its extra wide 3° field and its superb light-gathering ability with large 4¼" clear aperture to resolve panoramic vistas. Optional image erector adapts scope to view land objects. Focuses 25 feet to infinity. System is sealed to protect against dust and moisture and is permanently collimated at the factory. Complete with finder sight, dust cap, carrying strap, 10 page instruction book and 36 page sky guide. Increase power to 75X with optional RKE® eyepieces and Barlow (p. 97). Camera adapter available (p. 96).

Astroscan® 2001 Specifications

Primary Mirror: 4¼" (105mm); clear aperture f/4.2; 17½" (445mm) f.l. parabolic; Pyrex aluminized and overcoated; figured to ⅛ wave; factory precollimated and fixed.

Secondary Mirror: Elliptical 1.5" minor axis; ⅛ wave flat; aluminized and overcoated. Diagonal support mounted to an anti-reflection coated optical window providing protection against moisture, dust and damage to optics.

Eyepiece: 28mm e.f.l. RKE®; 45° field; standard 1¼" O.D. barrel.

Magnification: 16X with 28mm RKE®; 75X with optional eyepieces and Barlow.

Field of View: 3.0 degrees at 16X.

Focuser: Positive-grip rubber roller type, 25 ft. to infinity.

Weight: Scope weighs 10.75 lbs. Base is 2 lbs.

Body: Special high-impact red plastic.

Astroscan® 2001 Includes telescope, base, 28mm RKE® eyepiece, finder sight, dust cap, instructional aids and directions. E2001 $489.50

Astroscan® 2001 (with image erector). Allows you to view objects right side up and see land objects correctly. E2008 $599.50

Accessories for Astroscan® 2001

Sun Screen: Allows viewer to see sun spots safely. E31,777 $63.50

Tripod Bracket: Adapts Astroscan® to a camera tripod. Aluminum. E72,314 $63.50

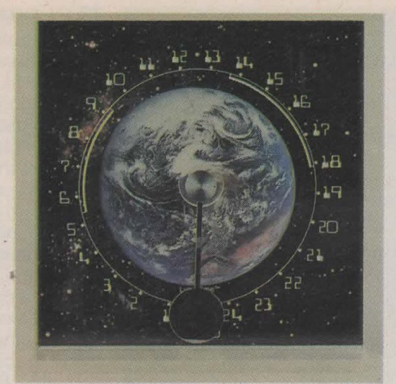
35mm Camera Adapter: Use with T-adapter (p. 96) for your specific camera make. E42,910 $89.50

Rubber Base Mat: Anti-skid protection for car or table. E83,023 $19.50

Tote Bag: Protects Astroscan® while traveling. Nylon. E42,698 $46.50

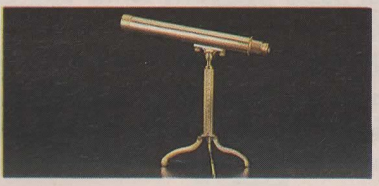
Straight Through Image Erector: E2007 $139.50

Using Your Astroscan®: 24 page paperback by Richard Berry is an invaluable reference source. E9585 $10.95



A NEW WAY OF KEEPING TIME

Not enough hours in a day to suit your schedule? Try tracking the day with Luna-time, a clock based on the 24 hour and 50 minute daily rotation of the Moon. Precision quartz clock shows actual position of the Moon at your selected location, when it will rise and set and the phase it is in. Also makes a practical tide clock. Acrylic 6" × 6" × ⅝" clock. Powered by single "C" cell alkaline battery (not incl.). Explore the mystery behind scientific research claims that the body's natural cycle matches that on the lunar, or circadian, day. E35,262 $119.50



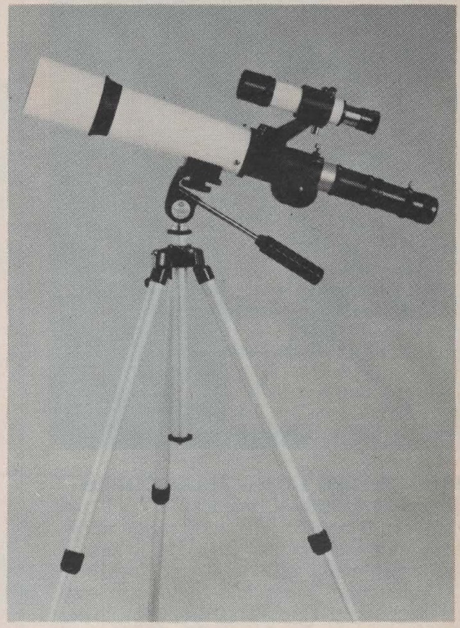
CLASSICAL 20X BRASS TELESCOPE

- **Ideal Presentation Piece**

All brass telescope is both functional and a classic trophy. Telescope barrel extends to 13⅝". 30mm objective lens. With adjustable tripod and wooden case. Weighs 18 ounces. C35,423 $214.50

Engraved Model. Specify one or two-line inscription and allow four weeks for delivery. E35,972 $264.50

A SPECIAL TELESCOPE



Wide Field Astronomical Telescope

A high quality telescope giving a very bright image over a wide field of view. Features a sturdy metal construction, high quality lens of 60mm diameter and 420mm focal length, and precision geared focusing. The special 28 mm eyepiece is mounted in a 31.7mm diameter tube and has a large aperture of 26mm for maximum brightness. Also included is the Plossl 8mm eyepiece giving 52.5 x magnification. The telescope is supplied with a Diagonal Prism and a Camera Adapter Ring which allows it to be used as a 420mm telephoto lens. The sighting scope has a patented XY adjustment system that makes it easy to use even for a beginner. The diagonal prism converts it into a terrestrial telescope for land viewing with an upright image.

Excellent for star gazing, searching for comets and then during the day best for bird watching or casual viewing across the street or across the lake. Highly recommend it! C49,701 $298.50

YOUR COMPLETE INDEX
IS ON PAGE 111

TELE-CONVERTER TURNS A CAMERA LENS INTO A TELESCOPE

Turn your 35mm SLR single-length or zoom, medium or long lens into a powerful erect image telescope! Internal optics boost lens power to true telescope range. Right-side-up images. Built-in tripod mount with three positions for optimum balance. Tele-converter comes with our own 15mm RKE® eyepiece. You can achieve a wide variety of powers with optional eyepieces listed in the chart below. With a "T" adapter (not included), lens screws directly into converter assembly. Choose between right angle viewer (best for astronomical use) or straight-through viewer (best for terrestrial use).

Right Angle E35,361 $264.50
Straight-Through E35,362 $264.50
T-adapter. Specify camera make. Each $19.50

MAGNIFICATION CHART

RKE EYEPIECE $62.50 ea.

YOUR LENS F.L.	8mm F30,820	12mm F30,940	15mm* F30,819	21mm F30,941	28mm F30,787
50mm	21.9X	14.6X	11.7X	7.0X	6.3X
90mm	39.4X	26.2X	21.0X	12.6X	11.3X
105mm	45.9X	30.6X	24.5X	14.7X	13.1X
135mm	59.1X	39.4X	31.5X	18.9X	16.9X
200mm	87.5X	58.3X	46.7X	28.0X	25.0X

*supplied w/converter

BAUSCH AND LOMB TELESCOPES

Criterion 4,000—Compact 7″ x 7″ x 14 unit combines telephoto lens, long range microscope and astronomical telescope in one 10 pound instrument. 120VAC electric clock drive; 4X finderscope; 30mm and 18mm eyepieces; star diagonal; fork mounting complete with precision setting circles; adjustable latitude legs; carrying case. C34,832 $928.50

Schmidt-Cassegrain 6,000 and 8,000—For those who take astronomy seriously. 8,000 is an 8″ scope and with enchanced optical coatings, equipped with 8 power, 2" diameter finder scope. 40X to 480X visual power range. 40X to 800X photographic folded size is only 12"x13"x24". Weighs 25 pounds. Enormous light gathering and resolving powers.

6,000 is a 6⅛″ diameter scope with features but more compact and weighs only 18 lbs. with 30X to 360X magnification range.

S/C 6,000 C35546	**$1629.50**
S/C8,000 C35,547	**$1769.50**

Accessories

Field tripod and astronomical wedge for either of the 6,000 or 8,000 scopes.	C35,551	$739.50
Field tripod and wedge for 4,000.	C49,661	$279.50
Camera mount for 4,000.	C49,662	$18.95
Camera mount for 6,000 or 8,000.	C49,663	$18.95
Telextentor	C49,664	$18.95
Off axis wider T section.	C49,665	$175.50
Illuminated eyepiece with reticle.	C49,666	$74.95
C video adapter.	C49,667	$52.95
prism for casual day observation.	C49,668	$72.95
Barlow lens (2x)/	C49,669	$39.95
Drive corrector.	C49,671	$295.50

For complete descriptive brochure and up to date information on any of the above telescopes, please write us. We will gladly answer your questions. Even better and to understand the excellent performance and potenial of any model send in $14.95 this will be refunded with the purchase of your telescope.

See details on page 104.

YOUR COMPLETE INDEX
IS ON PAGE 111

EXPLORE THE STARS WITH OUR 3-INCH F/6 TELESCOPE

This instrument features optics permanently collimated at the factory, eliminating the need and bother of adjustments. Finely crafted parabolic mirror, made to ⅛ wave accuracy. A compact tube provides a wide viewing field. Comes complete with an equatorial fork mount for full sky access, built-in finder sights for easy spotting of stellar objects, and a standard 1¼ inch, friction roller eyepiece mount which accepts a full line of RKE® eyepieces. Included in this great stargazing set is an all metal tripod of ¼ inch steel and thick walled aluminum to reduce vibrations. Telescope system also offers our 15mm RKE® high quality eyepiece to insure sharp viewing at 30X magnification.

Specifications: Primary Mirror: 3 inch (76mm) dia. f/6; 17½ inch (445mm) f.l. parabolized to ⅛ wave accuracy. Pyrex®, aluminized and SiO overcoated. **Secondary Mirror:** 25 x 35mm diagonal, Pyrex® aluminized and overcoated. **Telescope Tube:** 15 inch impact resistant, heavy walled ABS engineering resin, lightweight. **Tripod Mount:** Leg-thick walled aluminum tubing; fork mount—¼ inch thick steel. **Eyepiece:** 15mm f.l. RKE®, 30X 45° field. **Height/Weight:** 35 inch overall height: 12 pounds. **E31,308 $299.50**

3-Inch f/6 Tripod With Image Erector: Right side up views. **E31,639 $399.50**

RENT A TELESCOPE

Many would-be Astronomers have expressed their interest in using a good telescope before buying it.

This service is now available to you. A number of telescopes from the ones shown in this catalogue and other models, can be considered for renting or leasing, with or without an option of outright buying. Binoculars and spotting scopes or other specialty optical instruments will also be offered with about the same terms.

Please send in $2.00 (refundable), for a complete information package including a list of items available, terms and conditions, also you will have our suggestions or recommendations regarding your requirements.

Please let us know the possible use, and what your preference may be.

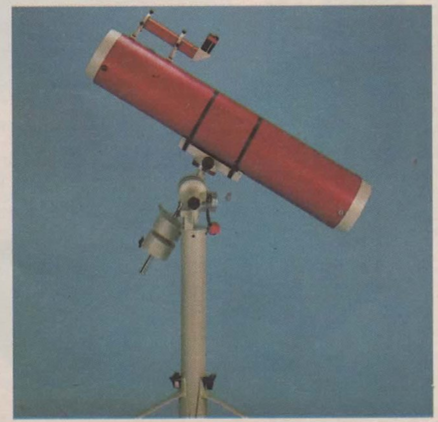
This is a great opportunity for a beginner, astronomer, the curious and the explorer to satisfy his/her needs with very easy terms suited to your budget.

EFSTONSCIENCE INC.
Science & Technology Agora

EDMUND 4¼″ f/10 TELESCOPE

Precision instrument with 4¼″ aperture which provides twice the light gathering ability of 3″ telescopes. Rigid phenolic fiber tube body with cast aluminum end rings and patented 0.005″ tensioned steel vanes for solid support. Excellent thermal insulation. Includes 28mm RKE eyepiece and sturdy, lightweight equatorial mount with synchronous clock drive.

Primary Mirror: 4¼-Inch f/10, 1143 mm f.l.; flat to ⅛ wave, parabolic; annealed, aluminized overcoated. **Secondary Mirror:** 1½″ minor axis ellipse; ⅛ wave flat; annealed, aluminized, and overcoated; patented 0.005″ steel support vane. **Eyepiece:** 28mm f.l. RKE®, 45° apparent field. **Focuser:** 1½″ I.D.; fine adjustment focusing mount. **Telescope Tube:** 5⅛″ O.D. x 44¾″ length; aluminum alloy mirror cells. **5X Finderscope:** Cross line reticle; eccentric ring mount for easy adjustment. **Equatorial Pedestal Mount:** 25½″ high steel pedestal; 37″ leg span diameter, 0° to 90° latitude compatibility; built-in adjustable setting circles; 115V AC synchronous clock drive. **E85,307 $765.50**



EDMUND 6″ f/6 TELESCOPE WITH CLOCK DRIVE

Precision Newtonian optical system has twice the light grasp of 4¼″ reflectors and 4 times that of 3″ models. Primary and secondary mirrors are housed within integrated end-cell units. One has 3-point collimation and locking screws. Other supported by our patented 0.005″ tensioned vane system. Choose between pedestal or ultra-stable fork equatorials.

Primary Mirror: 6-inch (152mm) diameter f/6; 914 mm (36″) focal length; figured to ⅛ wave parabolic; annealed Pyrex, aluminized & overcoated. **Secondary Mirror:** 1⅞″ minor axis ellipse; figured to ⅛ wave flat; annealed Pyrex, aluminized & overcoated. **Eyepiece:** 28 mm f.l. RKE®, gives 33X 45° apparent field of view. **Finder:** 7 x 30 mm with 5° field; cross-hair reticle; right-angle viewing comfort; adjustable ring mounts. **Focuser:** Fine adjustment mount, 1¼″ dia. I.D. **Telescope Tube:** 7″ O.D. phenolic fiber; thermal & vibration damping; aluminum alloy end-ring mirror cells.

6-Inch f/6 with Pedestal Mount (Shown) **E3011 $979.50**

RKE® EYEPIECES

High quality RKE® Eyepieces in five focal lengths provide maximum versatility. Developed using an affordable three element system which outperforms designs using four or more elements. Parfocal eyepieces have a field stop set at the focal plane to yield a short field border.

RKE® Eyepiece Specifications

	8mm	12mm	15mm	21mm	28mm*
Effective f.l.	8.0mm	12.0mm	15.0mm	21.5mm	28.7mm
Eye Relief	8.2mm	10.7mm	13.4mm	18.8mm	24.5mm
Apparent Field	45°	45°	45°	45°	45°
Field Stop Dia.	6.6mm	9.7mm	11.9mm	17.3mm	23.3mm
Barrel O.D.	Std. 1¼"	Std. 1¼"	Std. 1¼"	Std. 1¼"	Std. 1¼"
Number	**F30,820**	**F30,940**	**F30,819**	**F30,941**	**F30,787**
Price	**$62.50**	**$62.50**	**$62.50**	**$62.50**	**$62.50**

*The 28mm eyepiece includes rubber eyeguards for comfortable viewing.

FOCUSING INSTRUMENT EYEPIECE

Kellner-Type, 6X30 binocular eyepiece with 21.5mm f.l. Adjusting ring marked with diopter scale. Retractable rubber eyeguard for comfort. Internally threaded for filters. Barrel externally threaded for mounting, OEM applications. Not shown. **E41,395** **$32.50**

EDMUND SCIENTIFIC
EDMUND SCIENTIFIC
EDMUND SCIENTIFIC
EDMUND SCIENTIFIC
EDMUND SCIENTIFIC

SIX RKE® AND BARLOW EYEPIECE IN CUSTOM CUSHIONED CASE

This great bargain includes five RKE® eyepiece—8, 12, 15, 21 and 28mm—plus a 2.5X Barlow. All come in 12¼" x 6" x 4" cushioned case. A $495.00 value.

E30,942 **$425.50**

EDMUND'S 2.5X RKE® BARLOW LENS

Systems with 1¼" focusing tubes & eyepieces can increase magnification by 2.5 times. Computer traced to minimize aberration. Anti-reflection coated lens is fully color corrected. Eliminates the need to use short f.l. eyepiece.

RKE® Barlow 2.5X
E61,186 **$99.50**

COLOR-CORRECTED 2 ELEMENT BARLOW

Double or triple your telescope's power by changing the lens position in the tube. Accepts 1¼" eyepieces and fits into 1¼" focusing mounts.

2 Element Barlow Mounted
E40,477 **$39.50**

Unmounted Lens Only
E30,448 **$28.50**

EDMUND Or. 4MM

ORTHOSCOPIC AND RESEARCH GRADE EYEPIECES

- WIDE FLAT FIELD
- BEST CORRECTION FOR HIGH MAGNIFICATION
- EXCELLENT EYE RELIEF
- COATED OPTICS
- RESEARCH QUALITY OPTICS
- MULTICOATED AND PARFOCAL

Orthoscopic eyepieces are the most popular for high-powered viewing. Excellent spherical and chromatic correction. Eyepieces have a four element design, coated optics. Standard 1¼" O.D. chrome-plated brass and aluminum mounts. Additionally the research grade eyepieces are in use in many leading observatories with large telescopes. You are getting the best from this selection.

Focal Length	Orthoscopic	Price	Research Grade	Price
4	M07140	$89.95	M07150	$117.50
6	M07141	89.95		
7			M07151	117.50
9	M07142	89.95		
10.5			M07152	117.50
12.5	M07143	89.95		
16.8			M07153	117.50
18	M07144	89.95		
25	M07145	89.95		
28			M07154	117.50

WIDE ANGLE ERFLE EYEPIECE

A giant 16-element Erfle eyepiece gives 68° view & 32mm f.l. 2" O.D. barrel.

D41,347
$299.50

KELLNER ZOOM EYEPIECE

7.5 to 22.5mm zoom, has antireflective coating and is parfocal for all magnifications. O.D. is 0.966". **D61,067** **$109.50**

RUBBER EYEGUARDS

1½" to fit 2" large eyepieces
E60,099 **$13.95**

1⅛" to fit 1¼" std. eyepieces
E60,100 **$9.95**

.95" to fit .966" Japan eyepieces
E34,762 **$10.95**

ERFLE

Excellent aberration correction. 1¼" O.D.; chrome & black finish.

20MM E60,495
$99.50

32MM E36,172
$139.50

ORTHOSCOPIC ZOOM

Zooms to 21mm from 8.4mm. Wide flat field & excellent spherical aberration correction 1¼" O.D. **C60,362** **$139.50**

AN OBSERVATORY TO CALL YOUR OWN

Bausch And Lomb created a portable observatory with its Criterion 4000. Compact compound Schmidth-Cassegrain 102mm aperture scope measures 7" x 7" x 14". Weighs only 14 pounds. Offers a versatile telephoto lens, long range microscope and astronomical American-made telescope in one package. Precision engineering for breathtaking performance. Complete with 120VAC electric clock drive for Astro-Photographic time exposures, 4X finderscope, two 1½" eyepieces (30mm and 18mm), visual back, star diagonal fork mounting complete with precision setting circles, manual slow motions on both axles, power cord, fully adjustable, latitude legs which adjust for astronomical use and carrying case. 4" clear aperture; 4" diameter primary mirror, 35mm secondary obstruction; 1200mm Cassegrain focal length; 1.1 ARC/SEC. resolution limit; and 30-240X useful magnification. Includes limited lifetime manufacturer's warranty against defects. Criterion 4000 comes with an innovative, educationally tested Turn-Key Astronomy Kit which includes of the standard features above plus users manual and a Astrophotography Kit which includes all the accessories for photographing the moon, planets, comets and stars including correct adapter and plug. Please specify your camera make and model.

A Special Offer
C49,672 **$1068.50**

Astrophotography Kit Only
C49,673 **$149.50**

BAUSCH & LOMB "4000" PROFESSIONAL MODEL

The Professional "4000" comes with Enhanced Optical Coatings for 20% greater light transmission. Also includes a Barlow lens (2x) and camera mount. **C49,674** **$1115.00**

"4000" TELEPHOTO LENS

The 4000 offers an incredible telephoto capability. When coupled with an adapter to your 35mm camera, the "4000" has a 1200mm focal length (24 times as powerful as a 50mm lens), f/12 with full 4 inch diameter aperture. Focuses down to 15 feet, yet weighs less than 2 pounds. For a fraction of the cost of conventional telephoto lens systems, you can take spectacular terrestrial photos of birds and wildlife, or capture a close-up of the action at sporting events. At 1,000 yards, the field of view is 92.5 feet; resolution limit is 1.1 ARC-SEC.
C49,675 **$595.00**

Telescope Accessories

PRISM STAR DIAGONAL

Is ideal for 1¼ inch O.D. eyepiece. One inch clear aperture. Useful for highsky viewing.

Prism Star Diagonal C49,670 $49.50

STAR SPECTROSCOPE

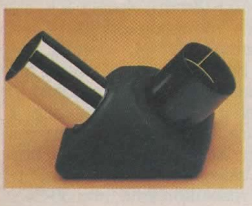
Yields 1nm resolution adequate to separate D double line. Telescopes w/1½" to 3" dia. objectives pick up spectra of 1-3 magnitude stars. Adapter allows coupling to lower power eyepieces.

E50,023 $599.50

1¼" I.D. FOCUSING MOUNT

Smooth rack & pinion focusing of standard 1¼" O.D. eyepieces and accessories. Features 2¼" focusing travel, two focusing knobs, four mounting holes. All mounting hardware included. Cast aluminum.

E50,077 $62.50



AMICI PRISM FOR 1¼ INCH O.D. EYEPIECE

Corrects image right to left; bands line of sight through a 90° angle, permitting terrestrial viewing.

Amici Prism E50,247 $79.50

PECHAN PRISM ADDS 3⅛" TO OPTICAL PATH

Use with telescopes with sufficient tube travel.

Pechan Prism Erecting Unit E6004 $139.50

REDLIGHT FLASHLIGHT

Tekna Micro-Lite has red 2.5X magnifying lens and bulb. 5.6" long plastic case is shock resistant and waterproof to 2,000 ft. Takes 2 "N" alkaline batteries (not incl.)

Micro-Lite	E34,798	$23.50
2 "N" Cells	E34,799	$ 6.95
3 Extra Bulbs	E34,800	$ 6.95

GIANT 2" I.D. FOCUSING MOUNT

Ideal for astrophotography. The 3⅞" diameter mount fits all standard telescope tubing. 2¼". Travel, 3".

FocusingMount D60,769 $116.50

Reduction Ring To 1¼ C49,209 $29.50

TRUE IMAGE ERECTOR

This well-crafted precision optical instrument has a roof prism allowing right-side-up vision, correctly oriented from left to right. Easily fitted inside 1¼ inch I.D. focuser tube 3½" long. Clear aperture is 8mm. Black anodized aluminum.

Image Erector E2007 $139.50

YOUR COMPLETE INDEX IS ON PAGE 111

EDMUND 6X FINDER TELESCOPE

With quality 24mm diameter objective lens. 1.25" diameter barrel, 9 inch long aluminum tube. Crossline reticle. Coated optics.

6X Telescope Without Mount E33,462 $34.50

6X Telescope With Mount E50,121 $44.50

9X FINDER TELESCOPE WITH STAR DIAGONAL

30mm diameter coated objective lens, 6° field of view. 1¼" inch O.D. prism star; crossline reticle.

9X Finder Telescope E61,201 $179.50

CAMERA ADAPTER

Use with any 1¼" eyepiece. Vary eyepiece magnification without extension tubes. Use with "T" adapter.

E42,910 $98.50

1¼" O.D. ADAPTER

Threaded end connects to a "T" adapter which attaches to 35mm SLR cameras. 1" long adapter tube fits into telescope focuser.

E40,975 $29.50

"T" Adapters

Connect your SLR camera to the "T" adapter & fit on your microscope tube.

"T" Adapters Each $19.95

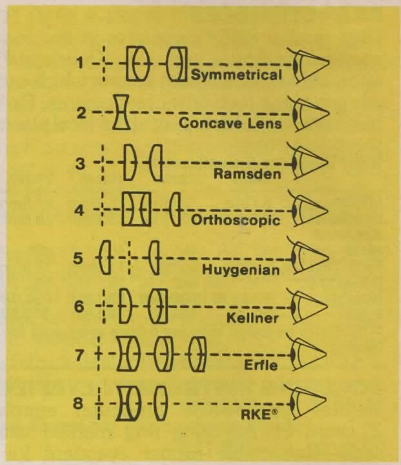
F42,832 Universal Thread Mt.; **F42,833** Pentax, All K & M, Ricoh, Vivitar, Chinon; **F40,960** Pentax (49mm); **F42,834** All SLR Minolta Models; **F42,838** Leica (Screw mount); **F42,835** Nikon; **42,836** Canon; **F31,517** Konica; **F42,837** Olympus; **F31,516** Yashica;

R.A. DRIVE CORRECTOR

For the amateur requiring accurate guiding capability at modest cost: Model 43 Drive Corrector is the best buy on the market, and also serves as a D.C. inverter for field use. Fast (90Hz) and slow (40Hz) controls in R.A. are actuated by pushbuttons. A variable center-frequency control is also included. The entire unit measures only 2"x3"x4" and the 12 watt power output (115 volts A.C. 60 Hz) is sufficient for almost any commercial telescope. Operates from 12 volts D.C. only; 15 ft. cable is included.

D49,515 $159.50

Eyepieces



EYEPIECE DESIGNS

The role of the eyepiece is to magnify the primary image of an object. The ratio of the objective's focal length to that of the eyepiece determines the power. Eyepiece design, therefore, affects magnification, image brightness, flatness of field, chromatic & other aberrations, field of view, exit pupil and eye relief. The designer is always trading one advantage for the other in an effort to optimize for specific eyepiece applications.

(1) Symmetrical. Two identical achromats spaced a small distance apart.

(2) Concave Lens. Used in Galilean telescopes. Only type that gives erect image. Good only for extremely low power. Very narrow field of view. Typical of opera glasses.

(3) Ramsden. Two plano-convex or double-convex lenses. Economical. Real image formed in front of field lens. 35–45° apparent field. Relatively little correction.

(4) Orthoscopic. Triplet field lens and plano-convex eye lens. Excellent color correction and wide field...35–50° apparent field. Relatively expensive.

(5) Huygenian. Two simple lenses. Image plane falls between lenses. Better color correction than Ramsden. Typical for microscopes and inexpensive telescopes. 25–40° apparent field.

(6) Kellner. Most common type for astronomical telescopes. Good color correction. Excellent for refractors & longer focus instruments. 40–55° apparent field.

(7) Erfle. Especially designed for extra-wide field with good correction of all aberrations. 65–70° apparent field. Usually quite expensive. Comprises three achromats.

(8) RKE® Computer optimization of the Type II Kellner. Provides bright wide sharp fields with excellent aberrational corrections using high index glass. 45° field. **An Edmund exclusive!**

.965 EYEPIECES

Series 2 Orthoscopic eyepieces yield excellent image quality on telescopes and any design. Modified Achromatic are 3 element and fine alternative for expensive oculars.

F.M.mm	Orthoscopic	Modified	Price
4	C49,732		64.50
6	C49,733		64.50
9	C49,734		64.50
9		C49,735	89.50
12.5	C49,736		64.50
12		C49,737	89.50
25	C49,803		64.50
25		C49,739	89.50
40		C49,804	89.50

A
B
MAG 6 STAR ATLAS
C
telescope OPTICS
D
Edmund MAG 5 STAR ATLAS
PHOTOGRAPHY with your TELESCOPE
G
HOMEBUILT TELESCOPES
H
E
F
J

SKY WATCHER GUIDES

All paperback **(A) Mag 6 Star Atlas.** Data on 1,000 celestial objects. 60 p. **E9611 $29.50** **(B) All About Telescopes.** Guide for buying & building scopes. 192p. **E9094 $19.50** **(C) Telescope Optics.** 33p. guide. Tables, diagrams. **E9074 $10.50** **(D) Mag 5 Star Atlas.** Maps, constellation index, more. 36p. **E9118 $12.95** **(E) Mounting Your Telescope.** Describes setting circles, clock drives. 36 p. **E9082 $10.50** **(F) Time In Astronomy.** Solar time, sidereal time, star positions. 36 p. **E9054 $10.50** **(G) Photography With Your Telescope.** Details spacing tables, image sizes, camera types. 36 p. **E9078 $10.50** **(H) Homebuilt Telescopes.** Describes grinding, testing, polishing. 36p. **E9066 $16.95** **(I) Telescopes You Can Build.** Plans for 27 scopes. 35p. **E9065 $10.50** **(J) How To Use Your Telescope.** Astrophotography finding sky objects, etc. 36p. **E9055 $10.50**

STAR, PLANET LOCATOR

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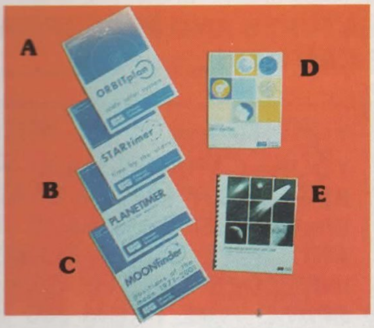

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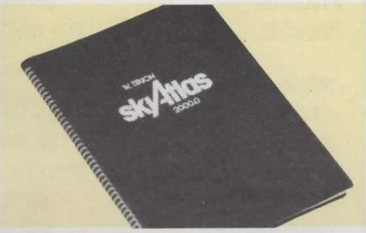

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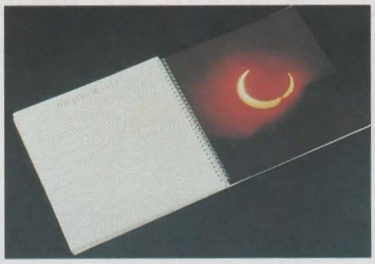

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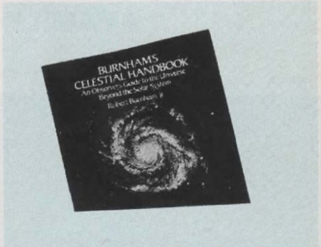
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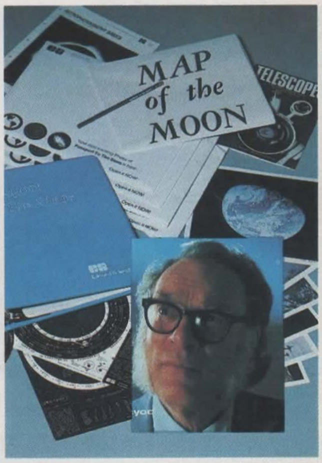

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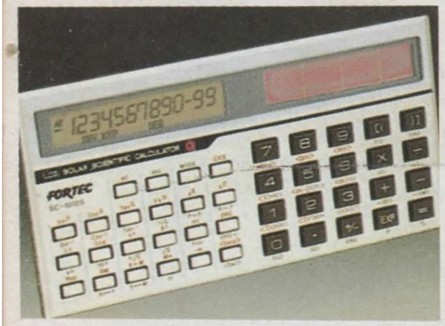

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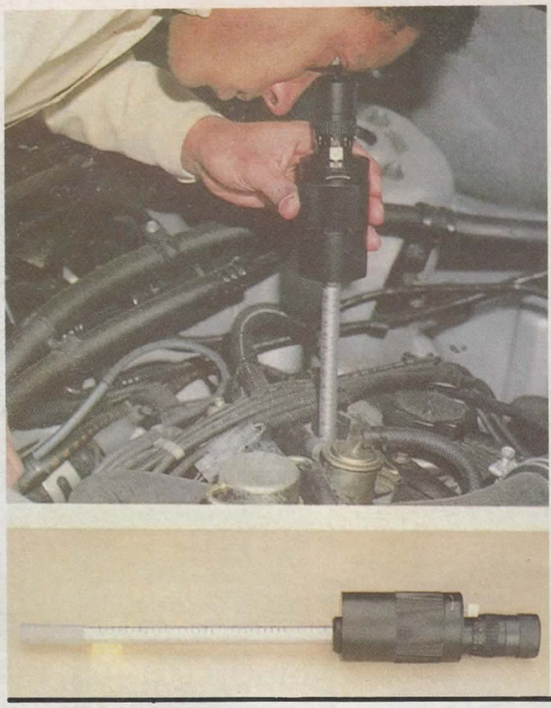

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